FIG.1

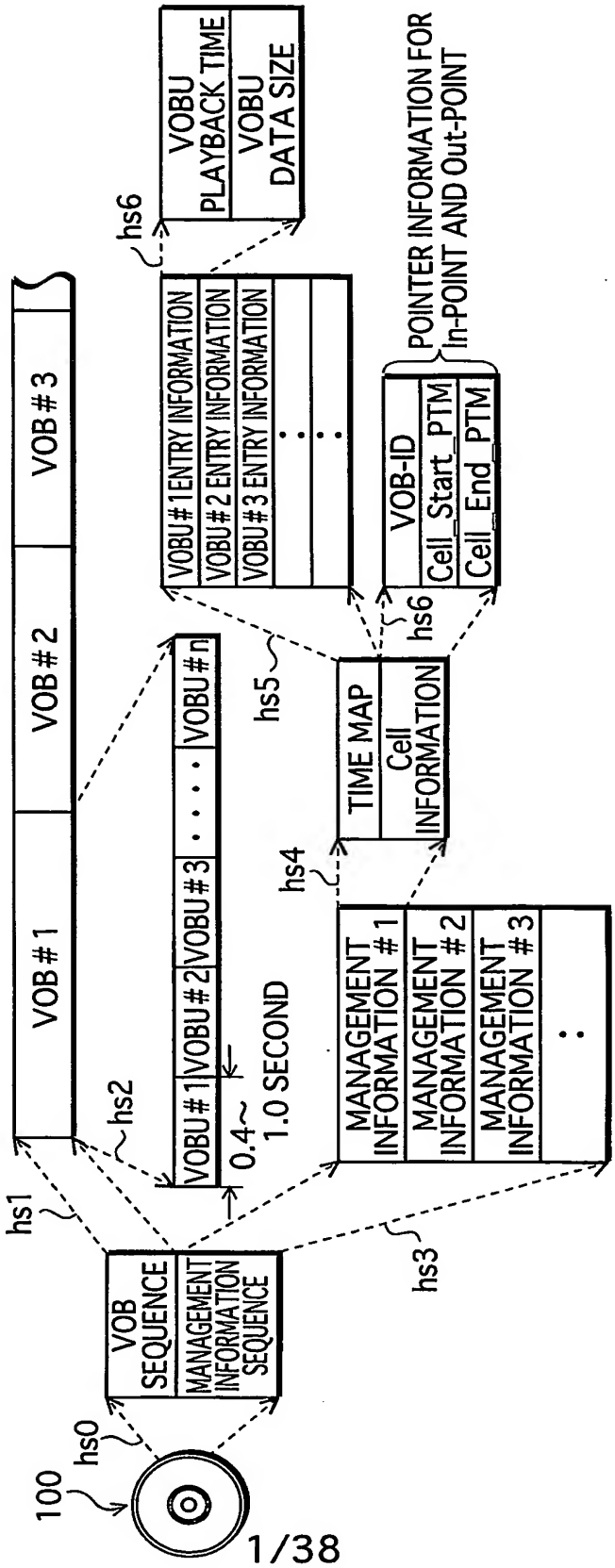

VOB SEQUENCE
MANAGEMENT INFORMATION SEQUENCE
VOB # 1
VOB # 2
VOB # 3
VOBU # 1
VOBU # 2
VOBU # 3
VOBU # n
0.4~ 1.0 SECOND
MANAGEMENT INFORMATION # 1
MANAGEMENT INFORMATION # 2
MANAGEMENT INFORMATION # 3
TIME MAP
Cell INFORMATION
VOBU # 1 ENTRY INFORMATION
VOBU # 2 ENTRY INFORMATION
VOBU # 3 ENTRY INFORMATION
VOBU PLAYBACK TIME
VOBU DATA SIZE
VOB-ID
Cell_Start_PTM
Cell_End_PTM
POINTER INFORMATION FOR In-POINT AND Out-POINT
hs0
hs1
hs2
hs3
hs4
hs5
hs6
hs6
100

FIG.2

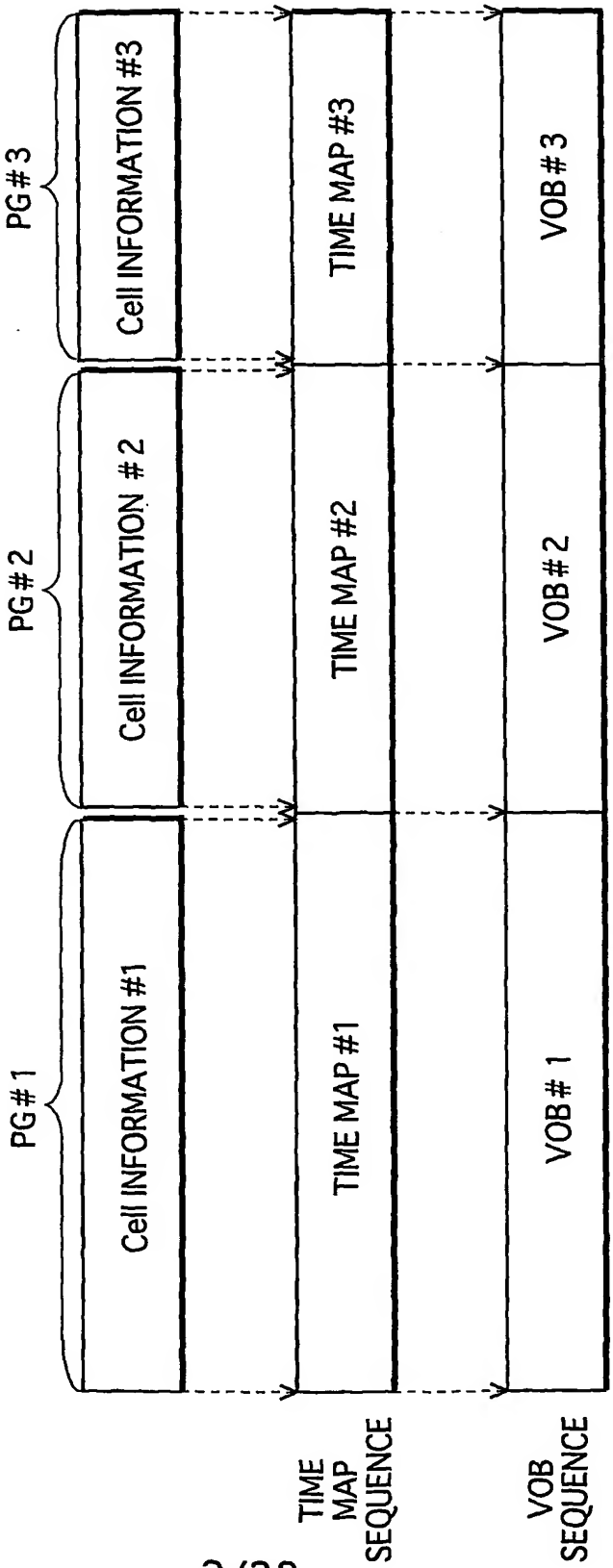

PG#1
PG#2
PG#3
Cell INFORMATION #1
Cell INFORMATION #2
Cell INFORMATION #3
TIME MAP #1
TIME MAP #2
TIME MAP #3
VOB#1
VOB#2
VOB#3
TIME MAP SEQUENCE
VOB SEQUENCE

FIG.3

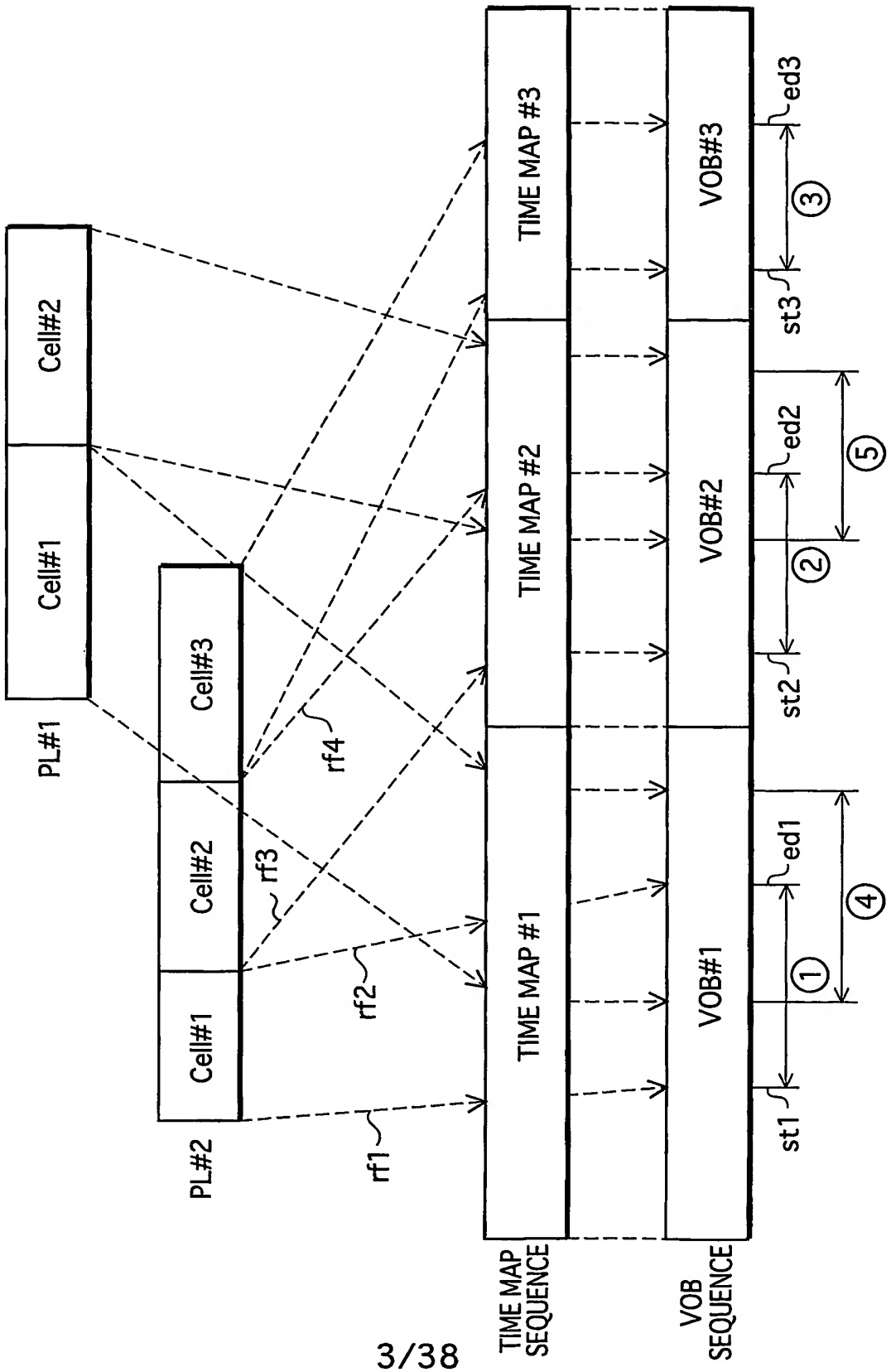

PL#1
Cell#1
Cell#2
PL#2
Cell#1
Cell#2
Cell#3
rf1
rf2
rf3
rf4
TIME MAP SEQUENCE
TIME MAP #1
TIME MAP #2
TIME MAP #3
VOB SEQUENCE
VOB#1
VOB#2
VOB#3
st1
ed1
st2
ed2
st3
ed3
①
②
③
④
⑤

FIG.4

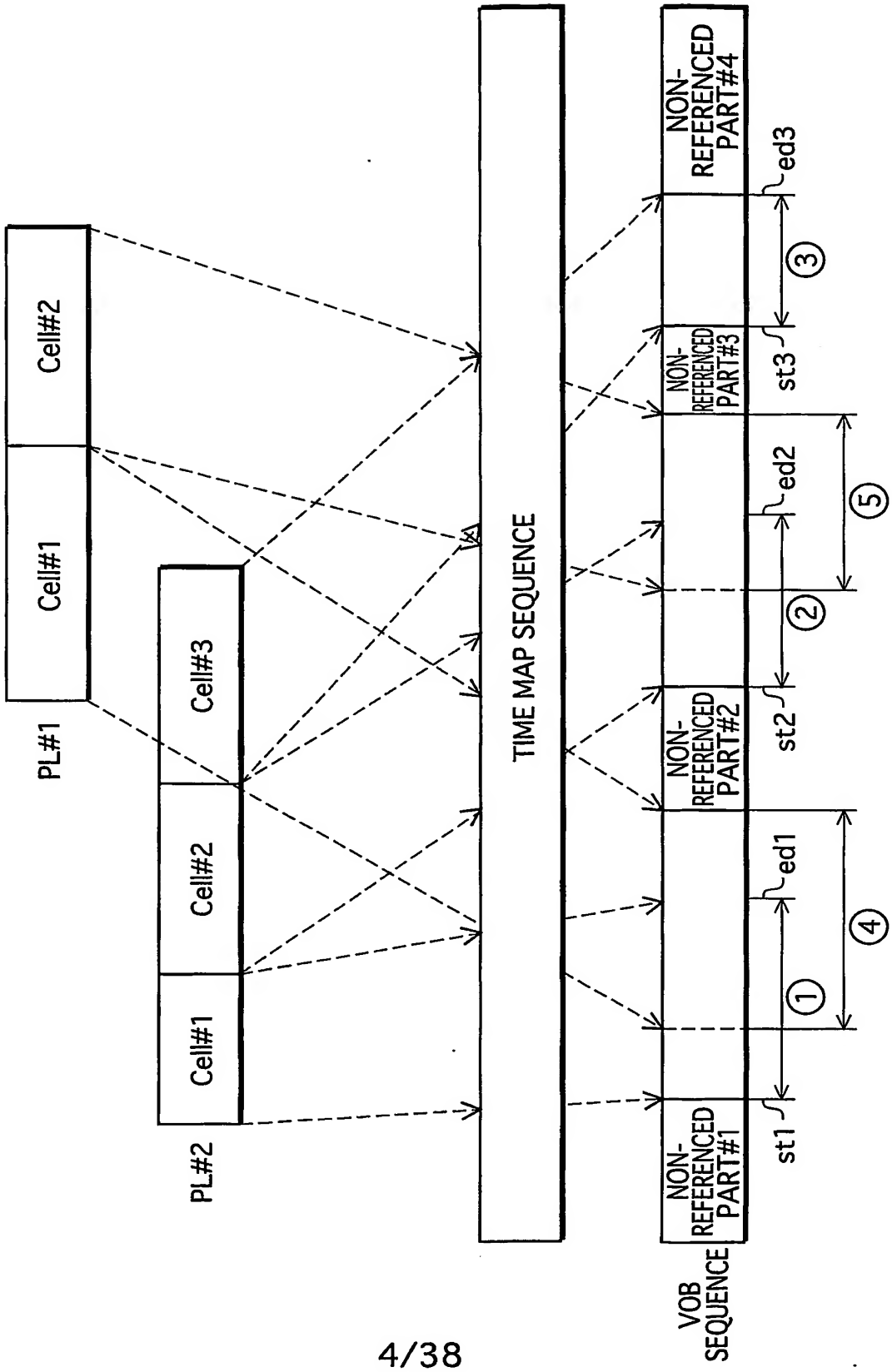

PL#1
Cell#1
Cell#2
PL#2
Cell#1
Cell#2
Cell#3
TIME MAP SEQUENCE
VOB SEQUENCE
NON-REFERENCED PART#1
NON-REFERENCED PART#2
NON-REFERENCED PART#3
NON-REFERENCED PART#4
st1
st2
st3
ed1
ed2
ed3
①
②
③
④
⑤

FIG.5

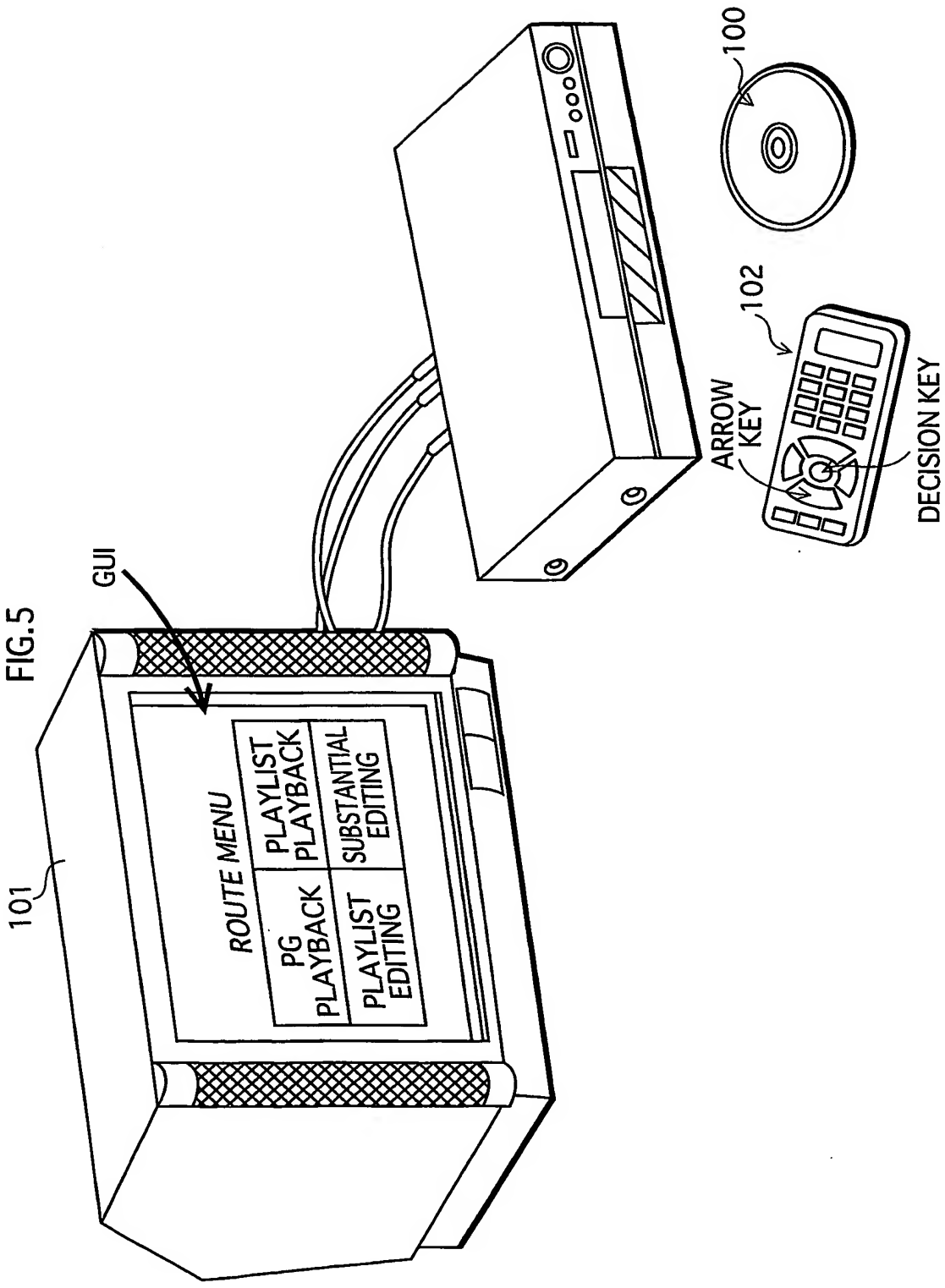

100
102
ARROW KEY
DECISION KEY
GUI
101
ROUTE MENU
PLAYLIST PLAYBACK
SUBSTANTIAL EDITING
PG PLAYBACK
PLAYLIST EDITING

FIG.6

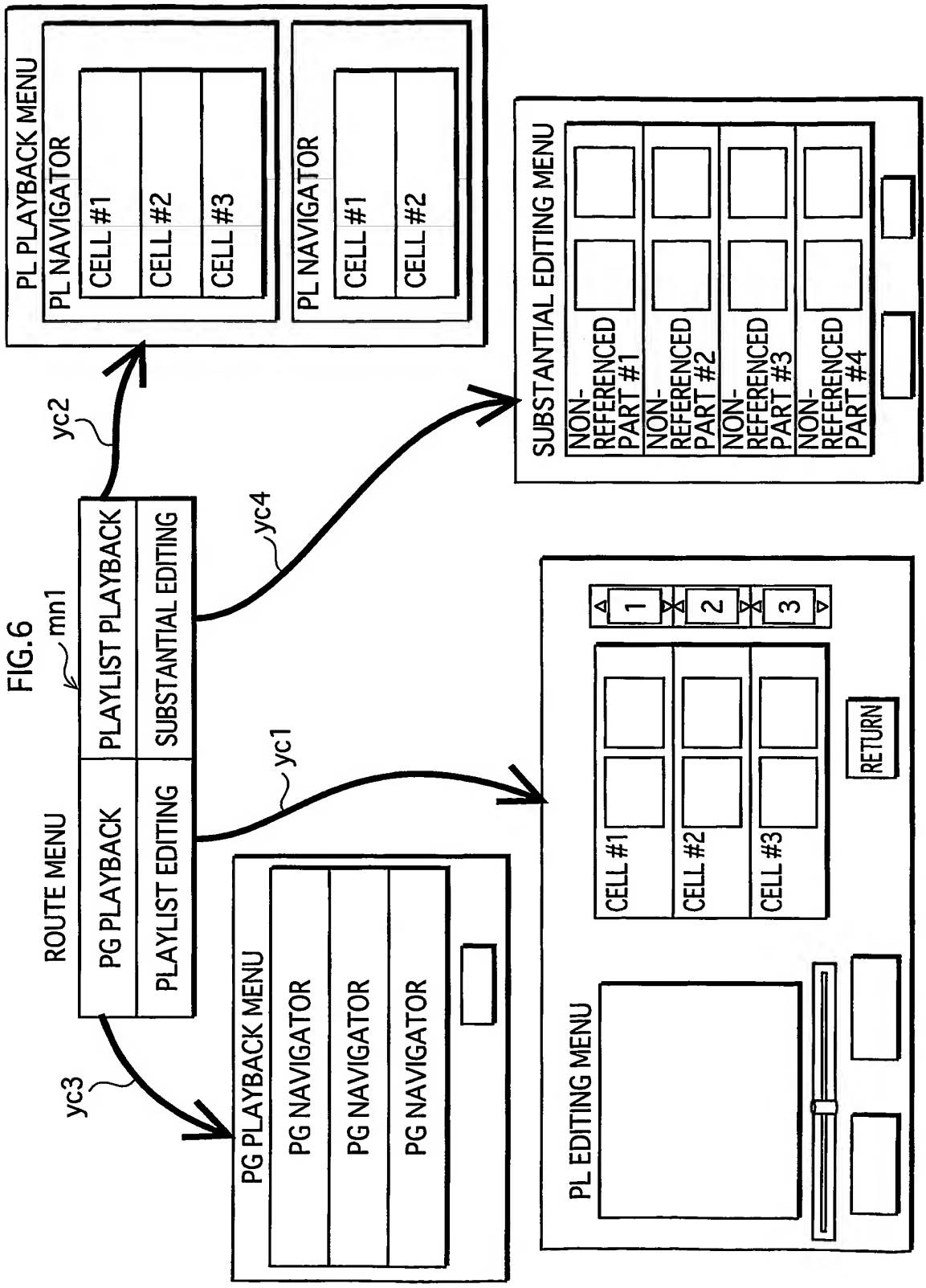

ROUTE MENU
PG PLAYBACK
PLAYLIST EDITING
PLAYLIST PLAYBACK
SUBSTANTIAL EDITING
mn1
yc1
yc2
yc3
yc4
PL PLAYBACK MENU
PL NAVIGATOR
CELL #1
CELL #2
CELL #3
PL NAVIGATOR
CELL #1
CELL #2
SUBSTANTIAL EDITING MENU
NON-REFERENCED PART #1
NON-REFERENCED PART #2
NON-REFERENCED PART #3
NON-REFERENCED PART #4
PG PLAYBACK MENU
PG NAVIGATOR
PG NAVIGATOR
PG NAVIGATOR
PL EDITING MENU
1
2
3
CELL #1
CELL #2
CELL #3
RETURN

FIG.7

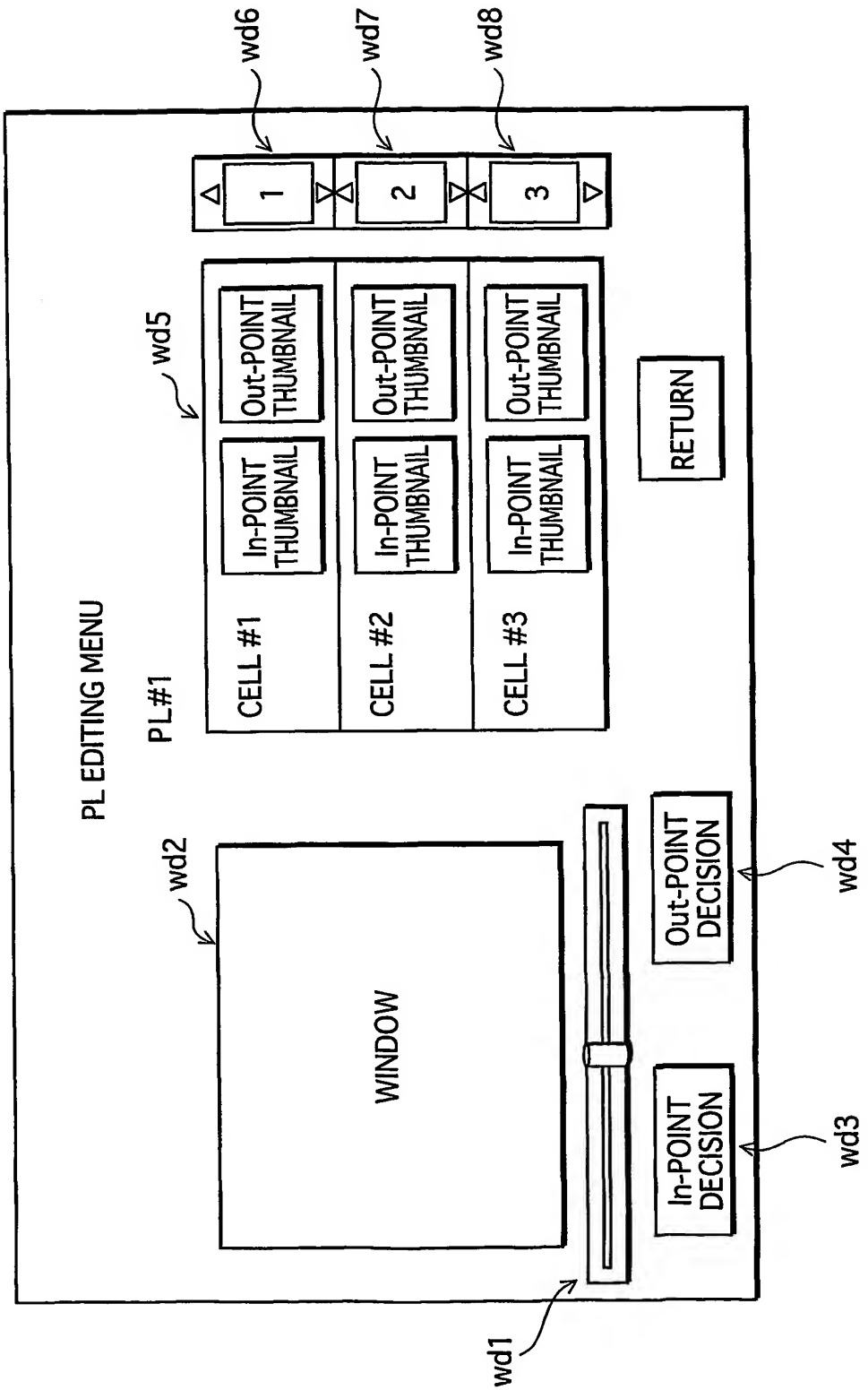
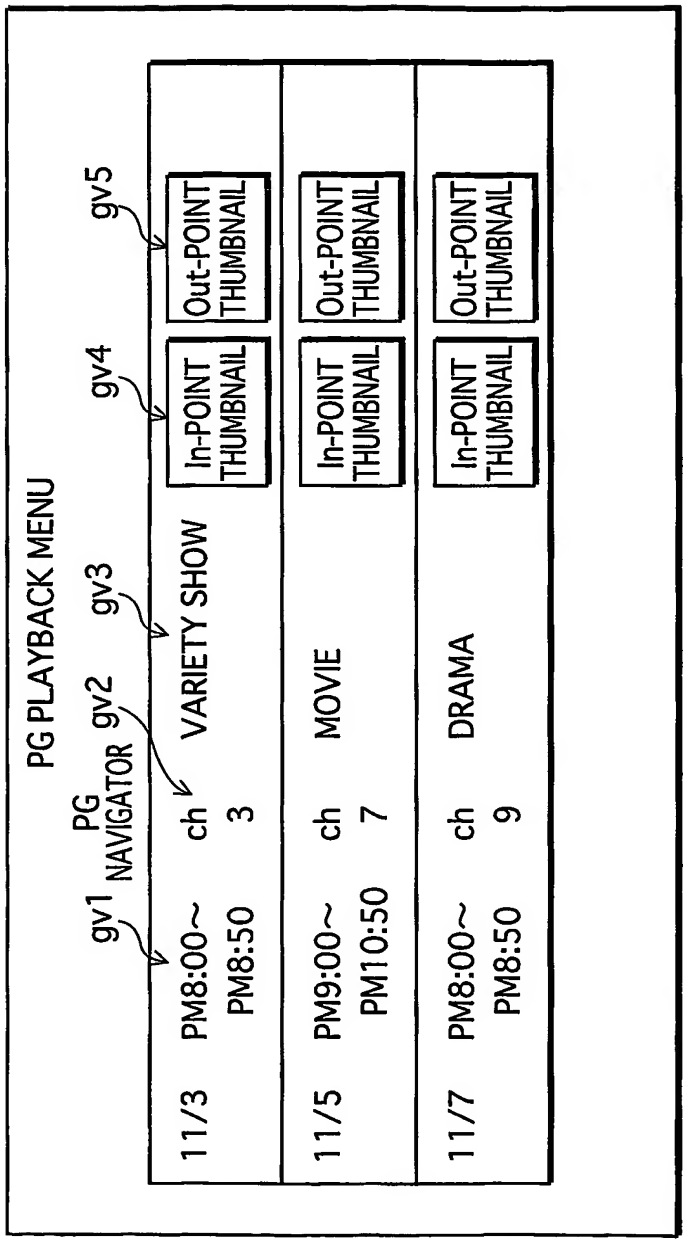

wd6
wd7
wd8
1
2
3
wd5
Out-POINT THUMBNAIL
In-POINT THUMBNAIL
CELL #1
CELL #2
CELL #3
RETURN
PL EDITING MENU
PL#1
wd2
WINDOW
Out-POINT DECISION
wd4
In-POINT DECISION
wd3
wd1

FIG.8


PG PLAYBACK MENU
gv1
PG NAVIGATOR
gv2
gv3
gv4
gv5
11/3 PM8:00~ PM8:50 ch 3 VARIETY SHOW
In-POINT THUMBNAIL
Out-POINT THUMBNAIL
11/5 PM9:00~ PM10:50 ch 7 MOVIE
In-POINT THUMBNAIL
Out-POINT THUMBNAIL
11/7 PM8:00~ PM8:50 ch 9 DRAMA
In-POINT THUMBNAIL
Out-POINT THUMBNAIL

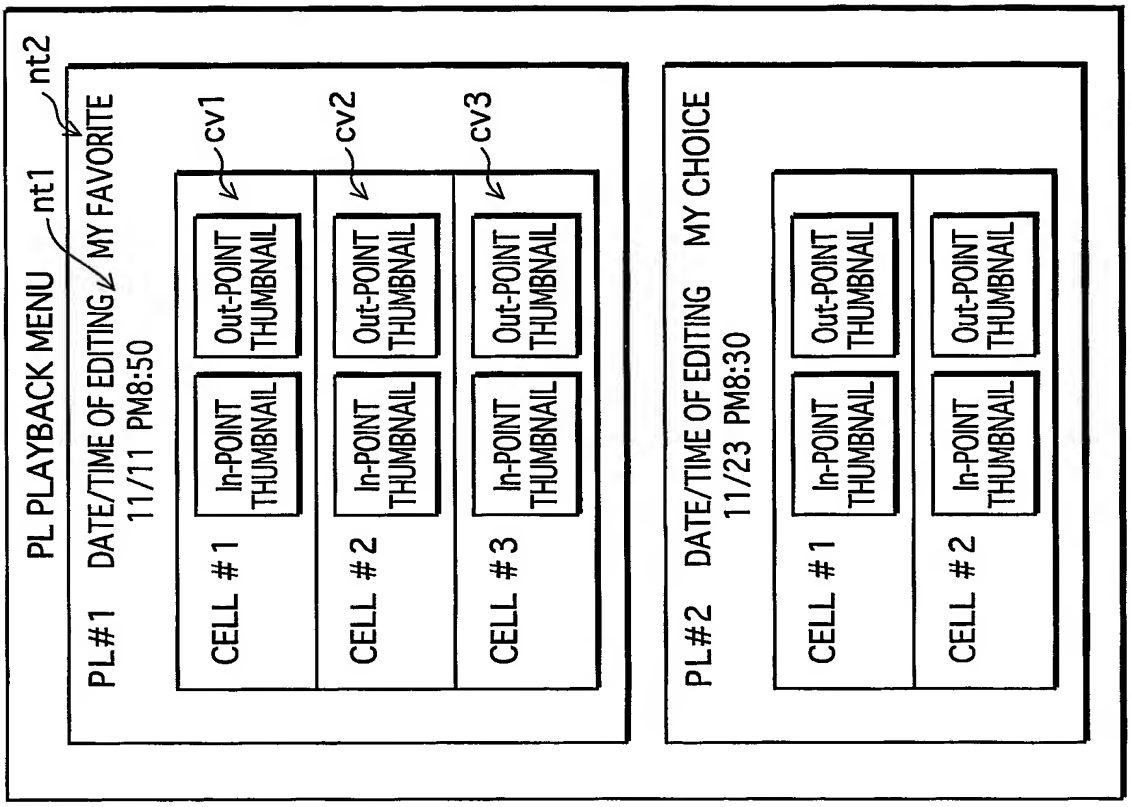

PL PLAYBACK MENU
nt1
nt2
PL#1 DATE/TIME OF EDITING MY FAVORITE
11/11 PM8:50
cv1
cv2
cv3
CELL #1
CELL #2
CELL #3
In-POINT THUMBNAIL
Out-POINT THUMBNAIL
PL#2 DATE/TIME OF EDITING MY CHOICE
11/23 PM8:30
CELL #1
CELL #2
In-POINT THUMBNAIL
Out-POINT THUMBNAIL

FIG.9

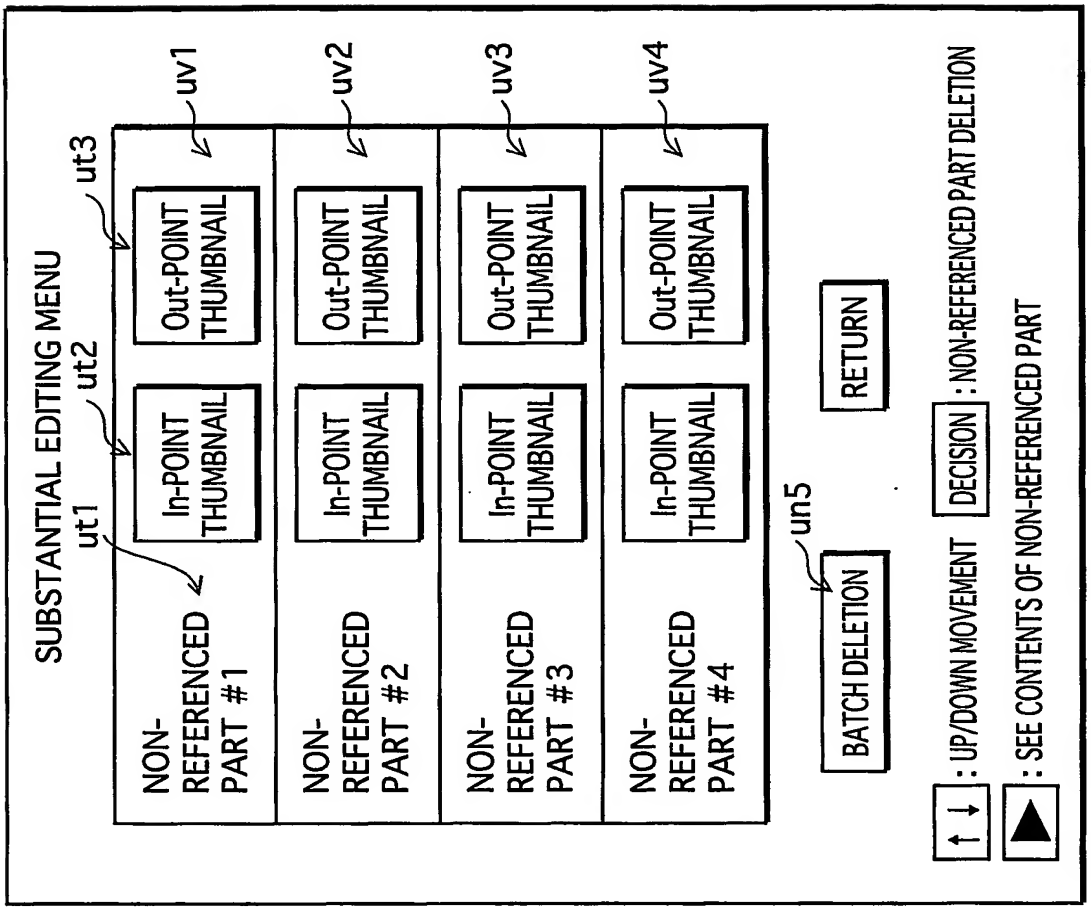

SUBSTANTIAL EDITING MENU
ut1
ut2
ut3
uv1
uv2
uv3
uv4
NON-REFERENCED PART #1
NON-REFERENCED PART #2
NON-REFERENCED PART #3
NON-REFERENCED PART #4
In-POINT THUMBNAIL
Out-POINT THUMBNAIL
un5
BATCH DELETION
RETURN
: UP/DOWN MOVEMENT
DECISION
: NON-REFERENCED PART DELETION
: SEE CONTENTS OF NON-REFERENCED PART

FIG.10

FIG.11

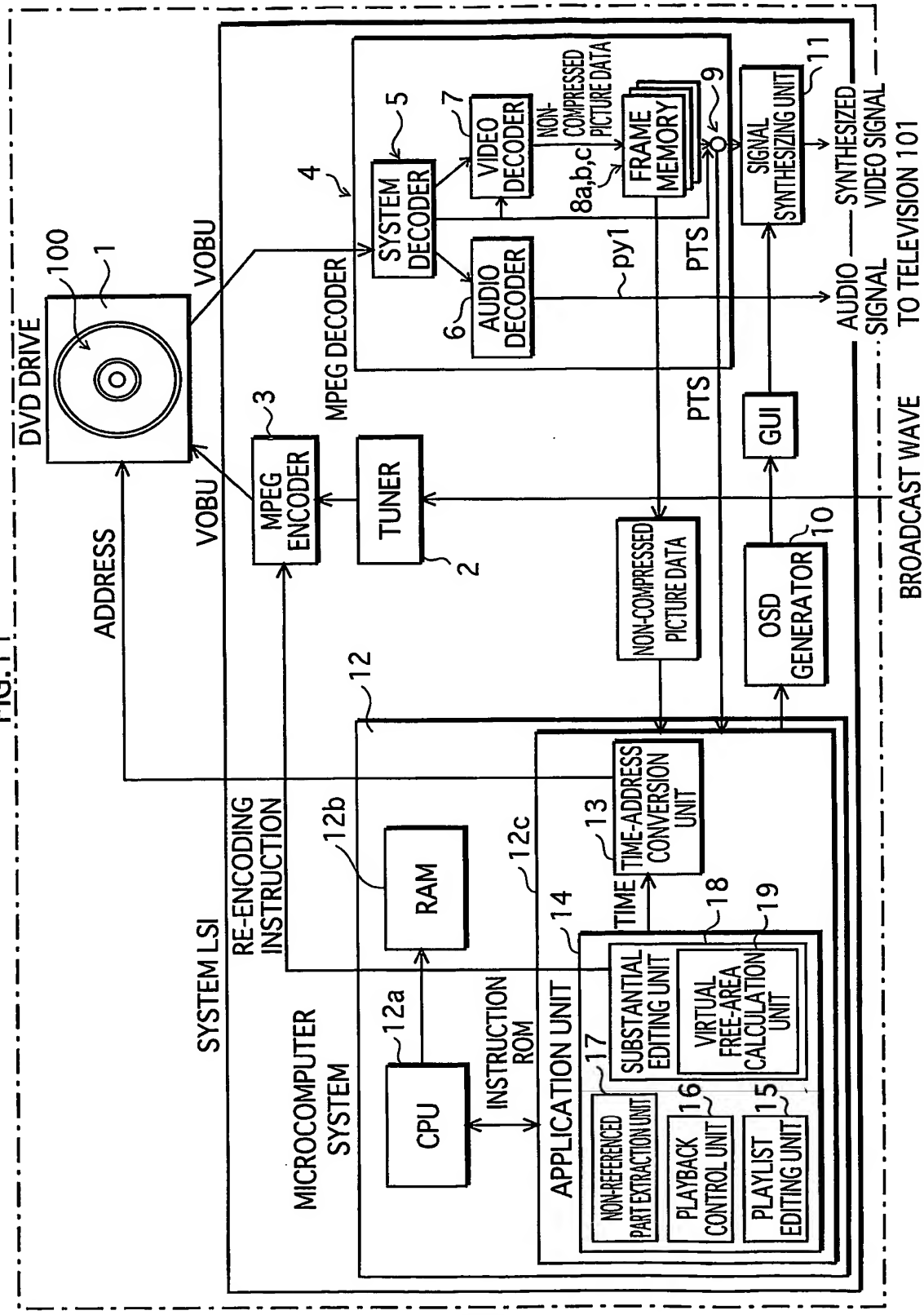

DVD DRIVE
100
1
VOBU
ADDRESS
VOBU
MPEG ENCODER
3
TUNER
2
MPEG DECODER
4
SYSTEM DECODER
5
AUDIO DECODER
6
VIDEO DECODER
7
NON-COMPRESSED PICTURE DATA
8a,b,c
FRAME MEMORY
9
SIGNAL SYNTHESIZING UNIT
11
SYNTHESIZED VIDEO SIGNAL
TO TELEVISION 101
AUDIO SIGNAL
py1
PTS
PTS
GUI
OSD GENERATOR
10
NON-COMPRESSED PICTURE DATA
BROADCAST WAVE
SYSTEM LSI
RE-ENCODING INSTRUCTION
12
12b
RAM
12c
TIME-ADDRESS CONVERSION UNIT
13
TIME
14
18
19
MICROCOMPUTER SYSTEM
12a
CPU
INSTRUCTION ROM
APPLICATION UNIT
17
SUBSTANTIAL EDITING UNIT
VIRTUAL FREE-AREA CALCULATION UNIT
NON-REFERENCED PART EXTRACTION UNIT
16
PLAYBACK CONTROL UNIT
15
PLAYLIST EDITING UNIT

FIG.12

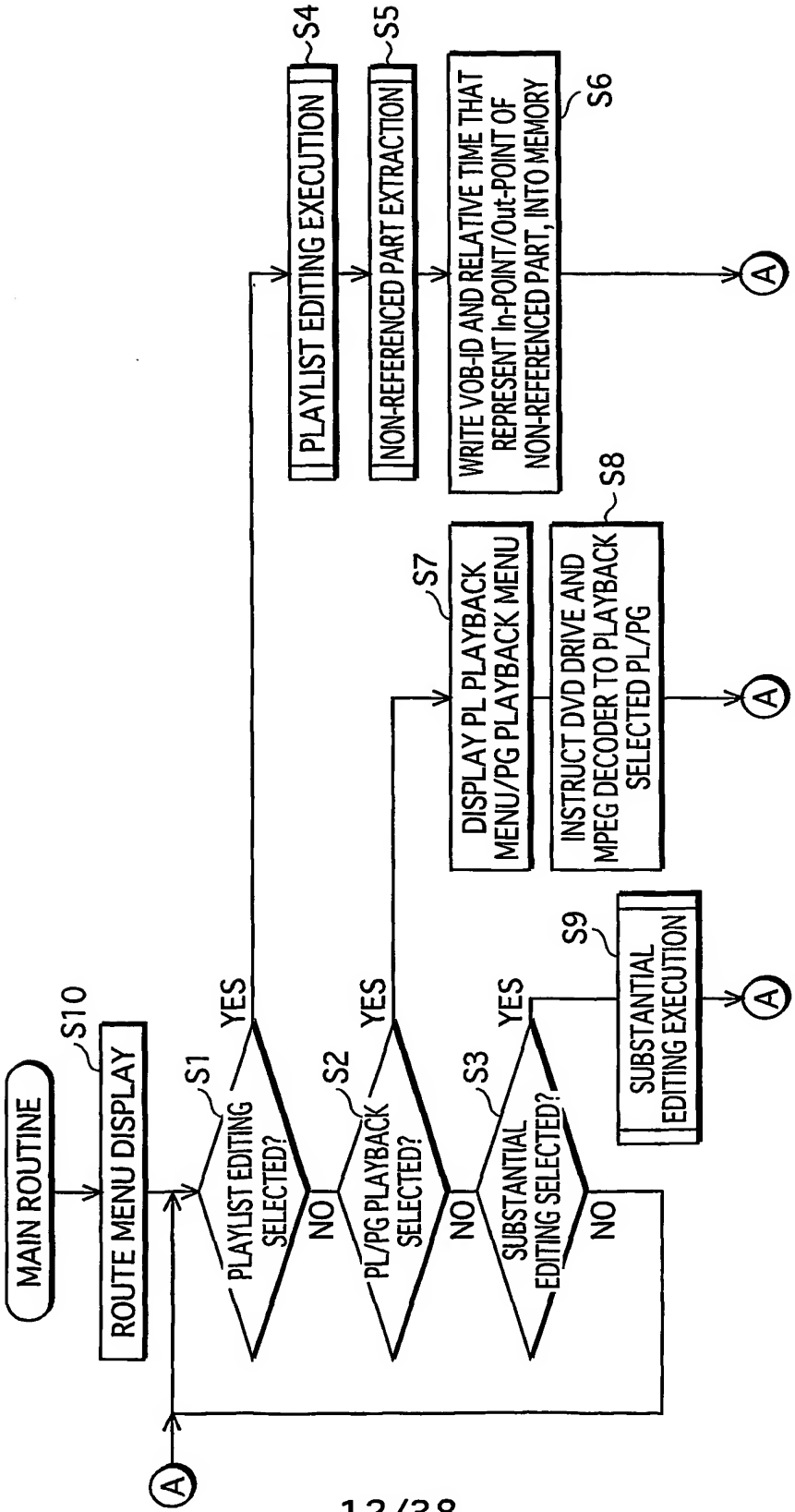

MAIN ROUTINE
ROUTE MENU DISPLAY
S10
PLAYLIST EDITING SELECTED?
S1
YES
NO
PL/PG PLAYBACK SELECTED?
S2
YES
NO
SUBSTANTIAL EDITING SELECTED?
S3
YES
NO
PLAYLIST EDITING EXECUTION
S4
NON-REFERENCED PART EXTRACTION
S5
WRITE VOB-ID AND RELATIVE TIME THAT REPRESENT In-POINT/Out-POINT OF NON-REFERENCED PART, INTO MEMORY
S6
DISPLAY PL PLAYBACK MENU/PG PLAYBACK MENU
S7
INSTRUCT DVD DRIVE AND MPEG DECODER TO PLAYBACK SELECTED PL/PG
S8
SUBSTANTIAL EDITING EXECUTION
S9
A
A
A
A

FIG.13

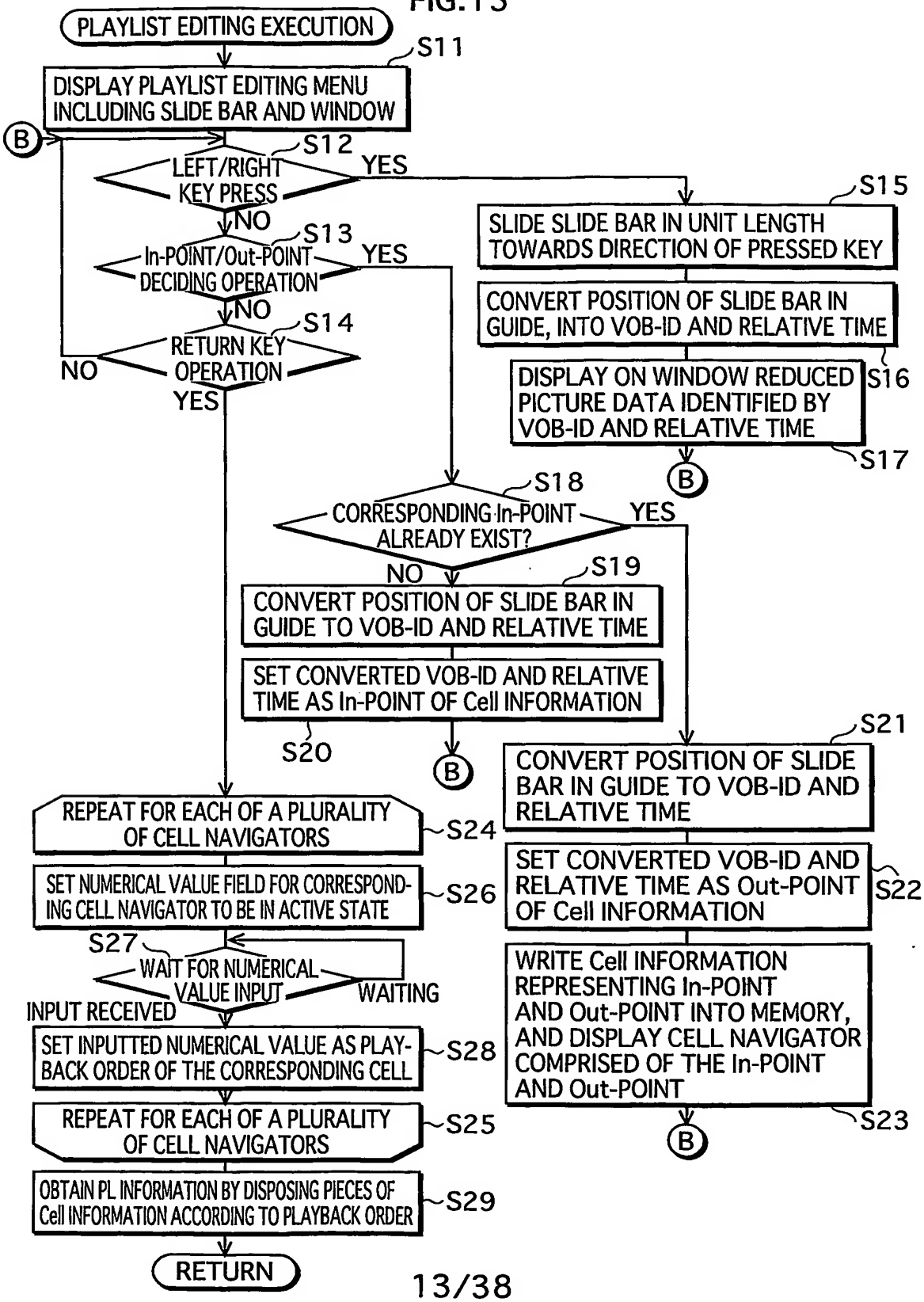

PLAYLIST EDITING EXECUTION
S11
DISPLAY PLAYLIST EDITING MENU INCLUDING SLIDE BAR AND WINDOW
B
S12
LEFT/RIGHT KEY PRESS
YES
NO
S13
In-POINT/Out-POINT DECIDING OPERATION
YES
NO
S14
RETURN KEY OPERATION
NO
YES
S15
SLIDE SLIDE BAR IN UNIT LENGTH TOWARDS DIRECTION OF PRESSED KEY
CONVERT POSITION OF SLIDE BAR IN GUIDE, INTO VOB-ID AND RELATIVE TIME
DISPLAY ON WINDOW REDUCED PICTURE DATA IDENTIFIED BY VOB-ID AND RELATIVE TIME
S16
S17
B
S18
CORRESPONDING In-POINT ALREADY EXIST?
YES
NO
S19
CONVERT POSITION OF SLIDE BAR IN GUIDE TO VOB-ID AND RELATIVE TIME
SET CONVERTED VOB-ID AND RELATIVE TIME AS In-POINT OF Cell INFORMATION
S20
B
S21
CONVERT POSITION OF SLIDE BAR IN GUIDE TO VOB-ID AND RELATIVE TIME
SET CONVERTED VOB-ID AND RELATIVE TIME AS Out-POINT OF Cell INFORMATION
S22
WRITE Cell INFORMATION REPRESENTING In-POINT AND Out-POINT INTO MEMORY, AND DISPLAY CELL NAVIGATOR COMPRISED OF THE In-POINT AND Out-POINT
S23
B
REPEAT FOR EACH OF A PLURALITY OF CELL NAVIGATORS
S24
SET NUMERICAL VALUE FIELD FOR CORRESPONDING CELL NAVIGATOR TO BE IN ACTIVE STATE
S26
S27
WAIT FOR NUMERICAL VALUE INPUT
WAITING
INPUT RECEIVED
SET INPUTTED NUMERICAL VALUE AS PLAY-BACK ORDER OF THE CORRESPONDING CELL
S28
REPEAT FOR EACH OF A PLURALITY OF CELL NAVIGATORS
S25
OBTAIN PL INFORMATION BY DISPOSING PIECES OF Cell INFORMATION ACCORDING TO PLAYBACK ORDER
S29
RETURN

FIG.14

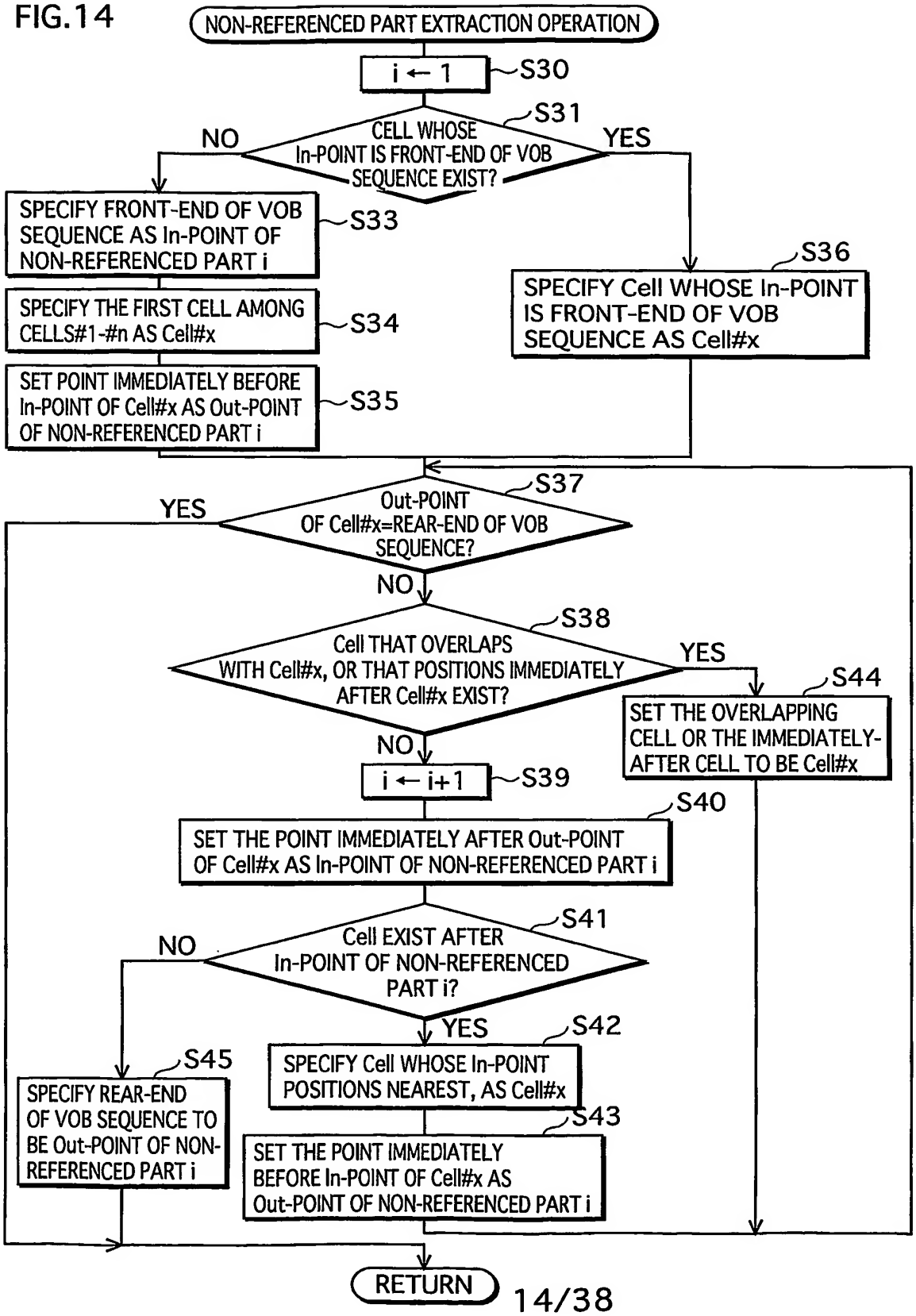

NON-REFERENCED PART EXTRACTION OPERATION
i ← 1
S30
CELL WHOSE In-POINT IS FRONT-END OF VOB SEQUENCE EXIST?
S31
NO
YES
SPECIFY FRONT-END OF VOB SEQUENCE AS In-POINT OF NON-REFERENCED PART i
S33
SPECIFY THE FIRST CELL AMONG CELLS#1-#n AS Cell#x
S34
SET POINT IMMEDIATELY BEFORE In-POINT OF Cell#x AS Out-POINT OF NON-REFERENCED PART i
S35
SPECIFY Cell WHOSE In-POINT IS FRONT-END OF VOB SEQUENCE AS Cell#x
S36
Out-POINT OF Cell#x=REAR-END OF VOB SEQUENCE?
S37
YES
NO
Cell THAT OVERLAPS WITH Cell#x, OR THAT POSITIONS IMMEDIATELY AFTER Cell#x EXIST?
S38
YES
NO
SET THE OVERLAPPING CELL OR THE IMMEDIATELY-AFTER CELL TO BE Cell#x
S44
i ← i+1
S39
SET THE POINT IMMEDIATELY AFTER Out-POINT OF Cell#x AS In-POINT OF NON-REFERENCED PART i
S40
Cell EXIST AFTER In-POINT OF NON-REFERENCED PART i?
S41
NO
YES
SPECIFY REAR-END OF VOB SEQUENCE TO BE Out-POINT OF NON-REFERENCED PART i
S45
SPECIFY Cell WHOSE In-POINT POSITIONS NEAREST, AS Cell#x
S42
SET THE POINT IMMEDIATELY BEFORE In-POINT OF Cell#x AS Out-POINT OF NON-REFERENCED PART i
S43
RETURN

FIG.15

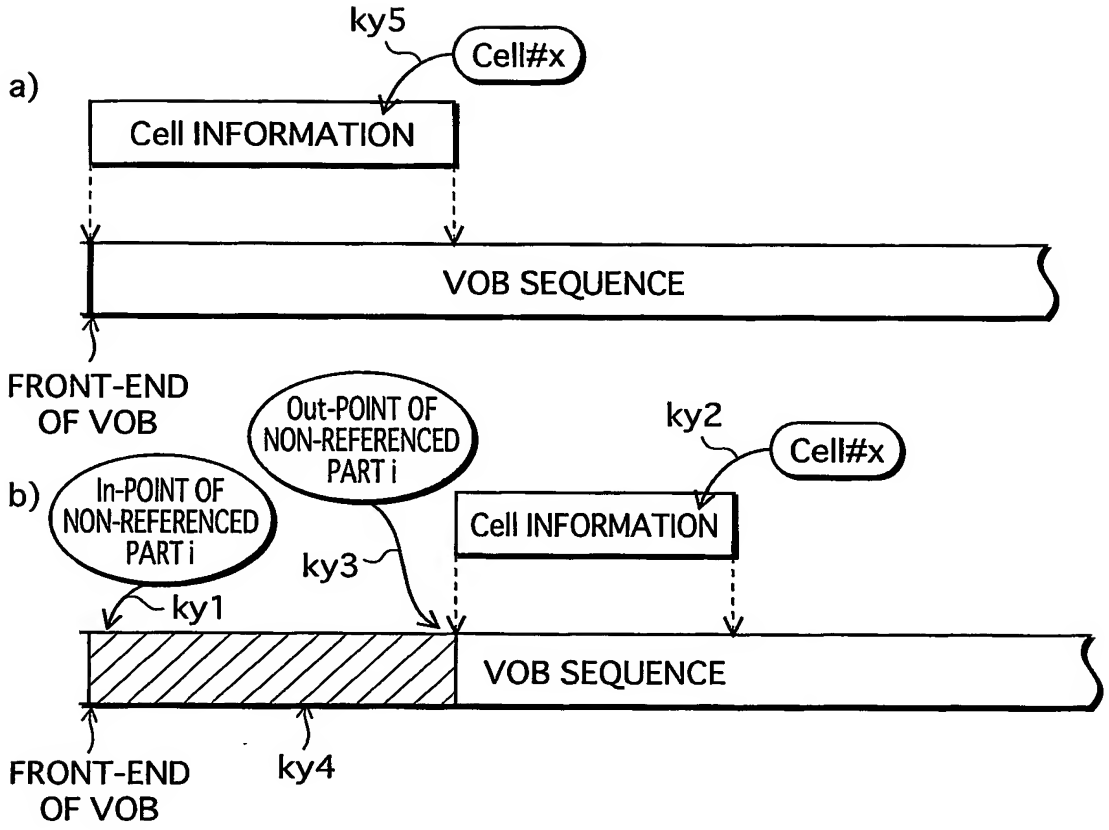

a)
ky5
Cell#x
Cell INFORMATION
VOB SEQUENCE
FRONT-END OF VOB
b)
In-POINT OF NON-REFERENCED PART i
Out-POINT OF NON-REFERENCED PART i
ky1
ky2
Cell#x
Cell INFORMATION
ky3
VOB SEQUENCE
FRONT-END OF VOB
ky4

FIG.16

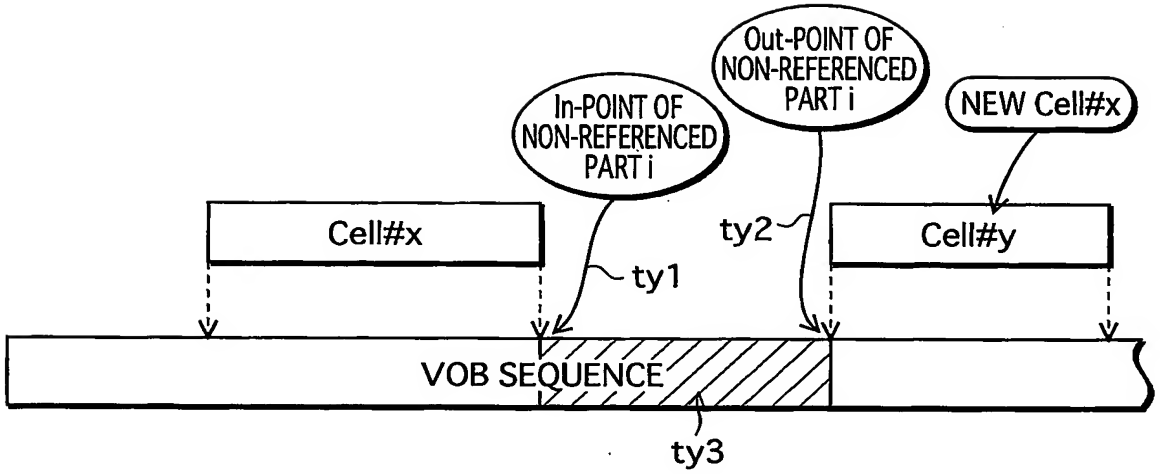

Out-POINT OF NON-REFERENCED PART i
In-POINT OF NON-REFERENCED PART i
NEW Cell#x
Cell#x
ty2
Cell#y
ty1
VOB SEQUENCE
ty3

FIG.17

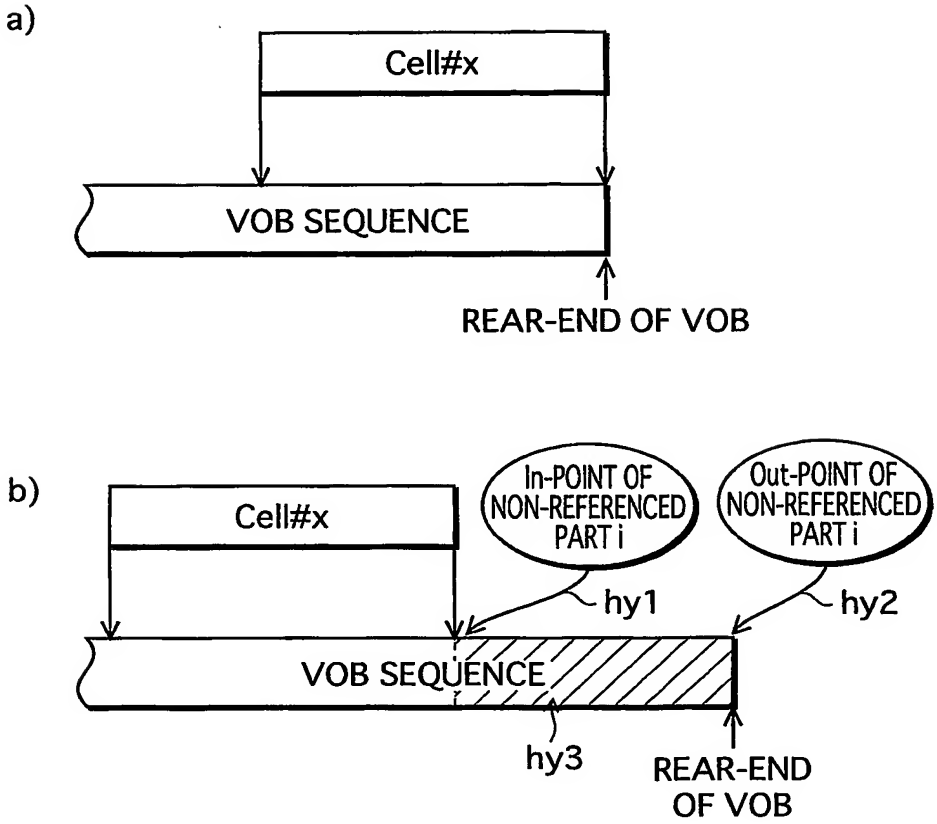

a)
Cell#x
VOB SEQUENCE
REAR-END OF VOB
b)
Cell#x
In-POINT OF NON-REFERENCED PART i
Out-POINT OF NON-REFERENCED PART i
hy1
hy2
VOB SEQUENCE
hy3
REAR-END OF VOB

FIG.18

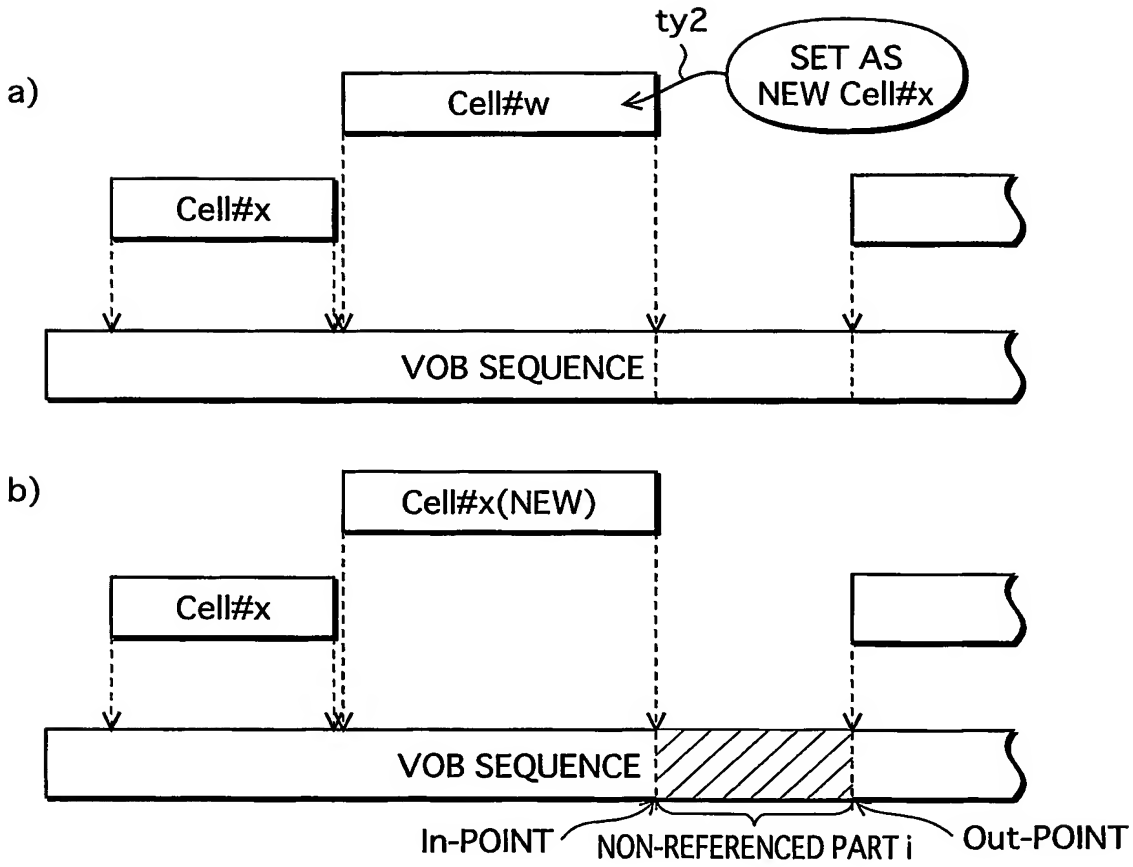

a)
ty2
SET AS
NEW Cell#x
Cell#w
Cell#x
VOB SEQUENCE
b)
Cell#x(NEW)
Cell#x
VOB SEQUENCE
In-POINT
NON-REFERENCED PART i
Out-POINT

FIG.19

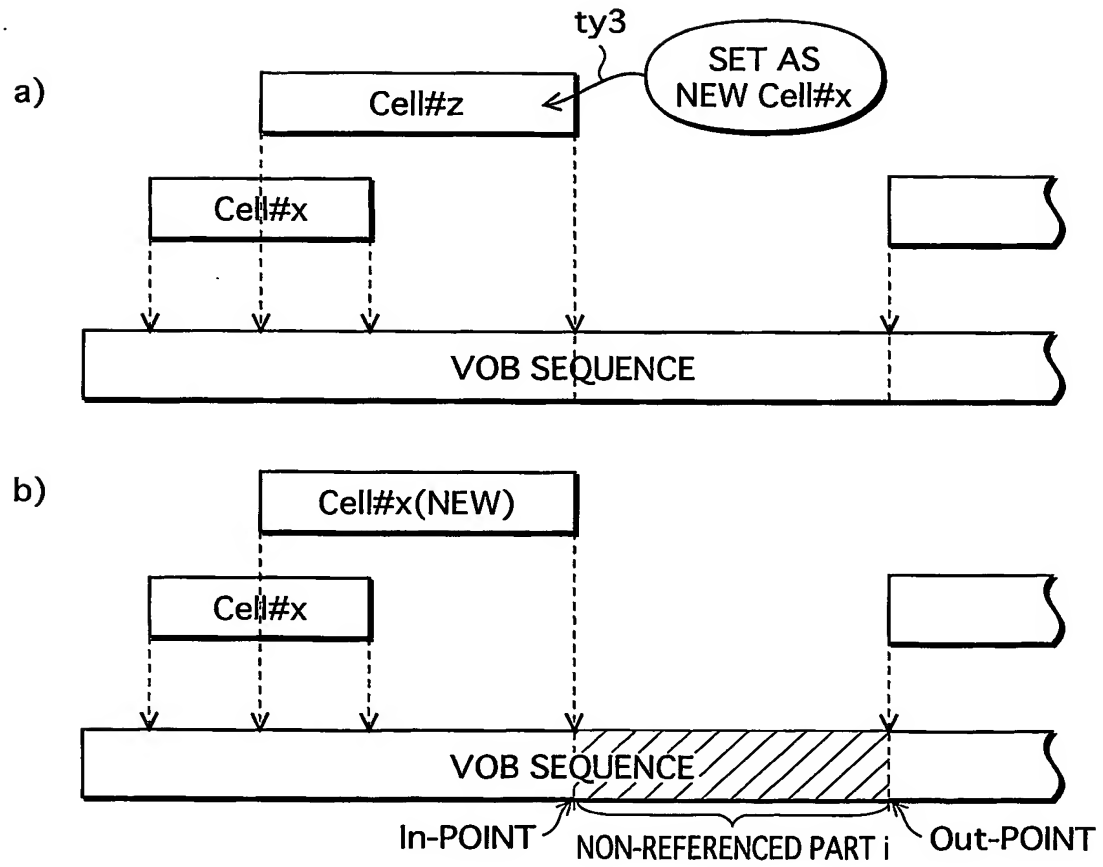

a)
ty3
SET AS
NEW Cell#x
Cell#z
Cell#x
VOB SEQUENCE
b)
Cell#x(NEW)
Cell#x
VOB SEQUENCE
In-POINT
NON-REFERENCED PART i
Out-POINT

FIG.20

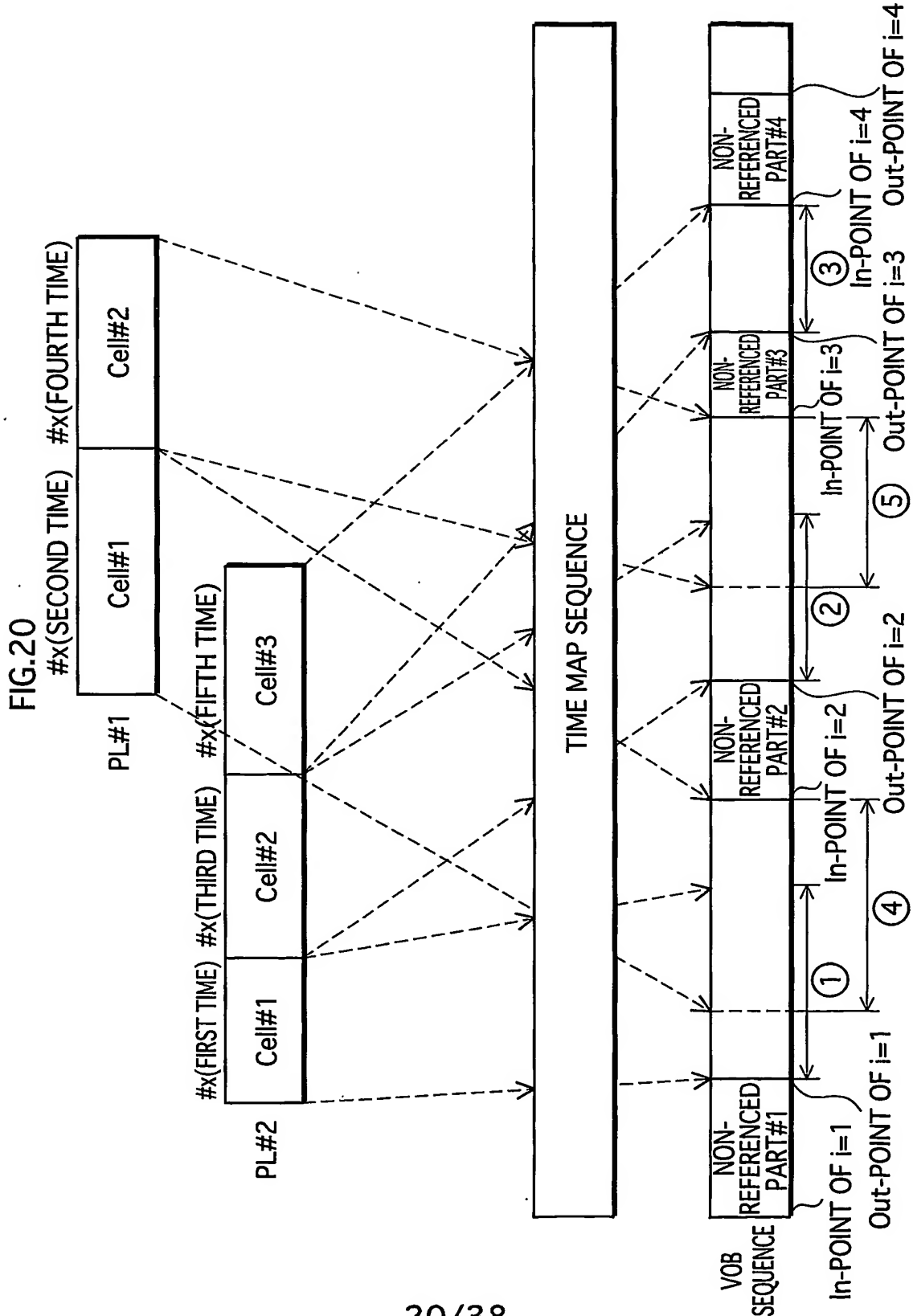

#x(SECOND TIME)
#x(FOURTH TIME)
Cell#1
Cell#2
PL#1
#x(FIRST TIME)
#x(THIRD TIME)
#x(FIFTH TIME)
Cell#1
Cell#2
Cell#3
PL#2
TIME MAP SEQUENCE
VOB SEQUENCE
NON-REFERENCED PART#1
NON-REFERENCED PART#2
NON-REFERENCED PART#3
NON-REFERENCED PART#4
In-POINT OF i=1
Out-POINT OF i=1
In-POINT OF i=2
Out-POINT OF i=2
In-POINT OF i=3
Out-POINT OF i=3
In-POINT OF i=4
Out-POINT OF i=4
①
②
③
④
⑤

FIG.21

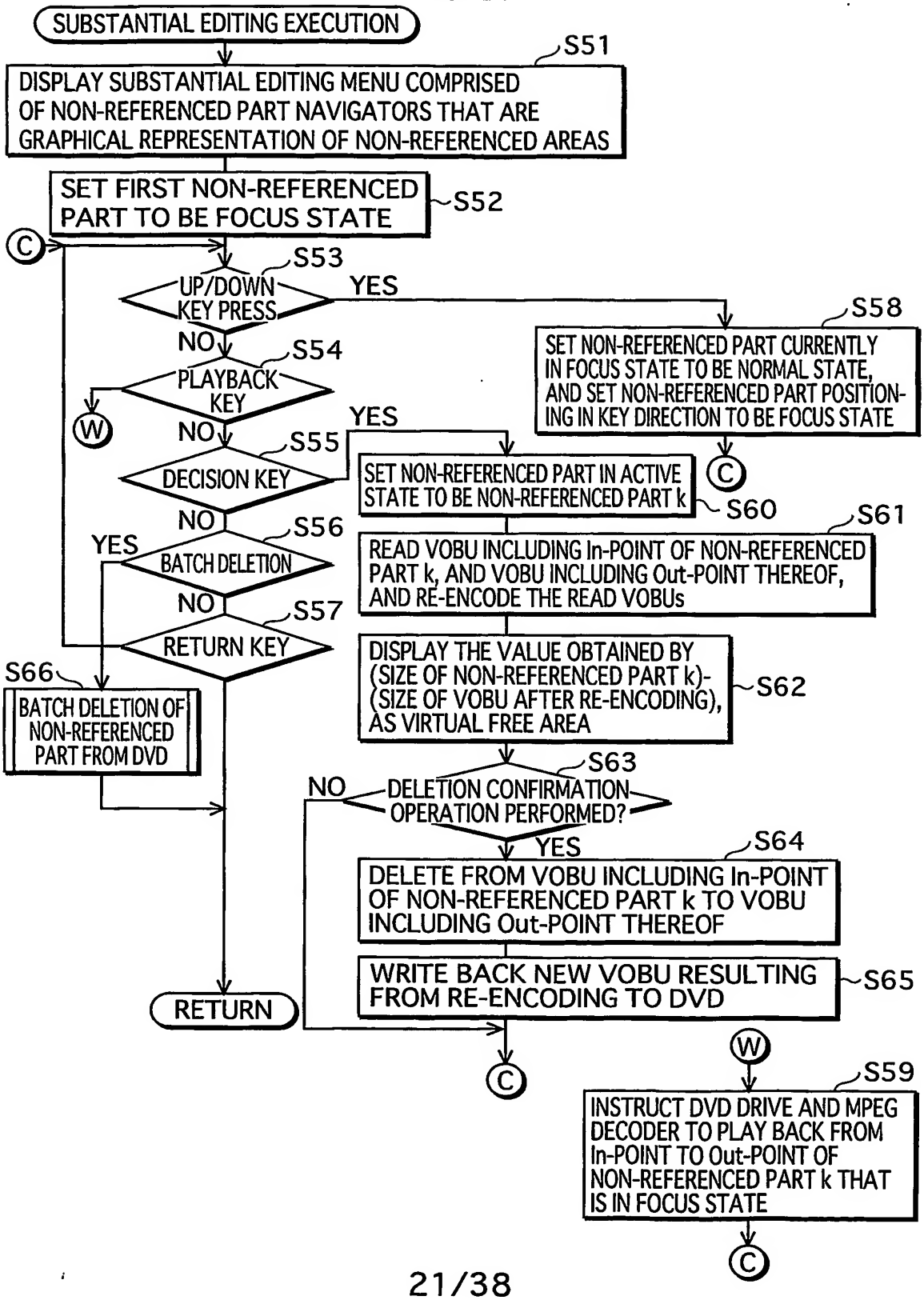

SUBSTANTIAL EDITING EXECUTION
S51
DISPLAY SUBSTANTIAL EDITING MENU COMPRISED OF NON-REFERENCED PART NAVIGATORS THAT ARE GRAPHICAL REPRESENTATION OF NON-REFERENCED AREAS
SET FIRST NON-REFERENCED PART TO BE FOCUS STATE
S52
C
S53
UP/DOWN KEY PRESS
YES
S58
SET NON-REFERENCED PART CURRENTLY IN FOCUS STATE TO BE NORMAL STATE, AND SET NON-REFERENCED PART POSITIONING IN KEY DIRECTION TO BE FOCUS STATE
NO
S54
PLAYBACK KEY
W
NO
YES
S55
DECISION KEY
SET NON-REFERENCED PART IN ACTIVE STATE TO BE NON-REFERENCED PART k
S60
S61
NO
S56
YES
BATCH DELETION
READ VOBU INCLUDING In-POINT OF NON-REFERENCED PART k, AND VOBU INCLUDING Out-POINT THEREOF, AND RE-ENCODE THE READ VOBUs
NO
S57
RETURN KEY
DISPLAY THE VALUE OBTAINED BY (SIZE OF NON-REFERENCED PART k)-(SIZE OF VOBU AFTER RE-ENCODING), AS VIRTUAL FREE AREA
S62
S66
BATCH DELETION OF NON-REFERENCED PART FROM DVD
S63
NO
DELETION CONFIRMATION OPERATION PERFORMED?
YES
S64
DELETE FROM VOBU INCLUDING In-POINT OF NON-REFERENCED PART k TO VOBU INCLUDING Out-POINT THEREOF
WRITE BACK NEW VOBU RESULTING FROM RE-ENCODING TO DVD
S65
RETURN
C
W
S59
INSTRUCT DVD DRIVE AND MPEG DECODER TO PLAY BACK FROM In-POINT TO Out-POINT OF NON-REFERENCED PART k THAT IS IN FOCUS STATE
C

FIG.22

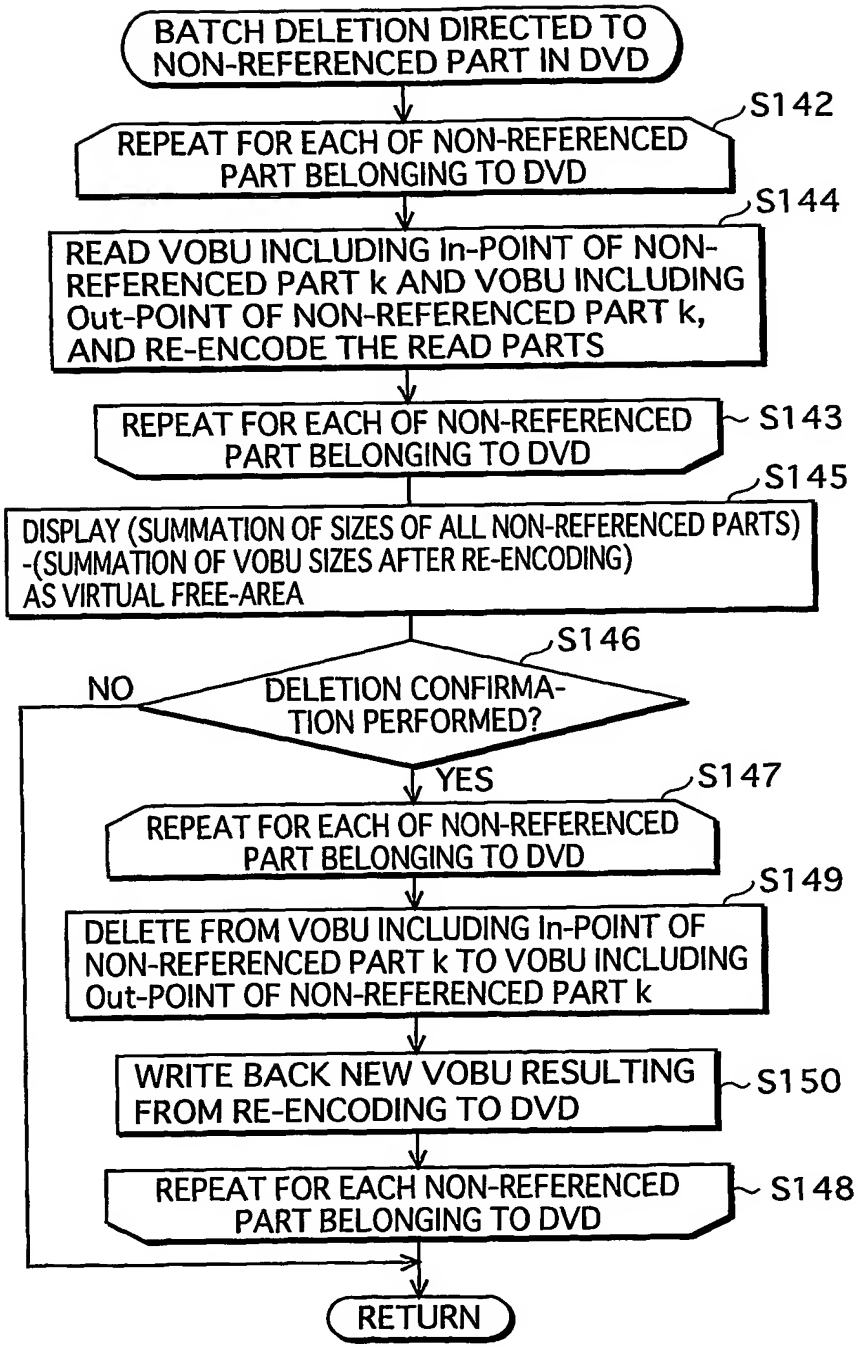

BATCH DELETION DIRECTED TO NON-REFERENCED PART IN DVD
S142
REPEAT FOR EACH OF NON-REFERENCED PART BELONGING TO DVD
S144
READ VOBU INCLUDING In-POINT OF NON-REFERENCED PART k AND VOBU INCLUDING Out-POINT OF NON-REFERENCED PART k, AND RE-ENCODE THE READ PARTS
REPEAT FOR EACH OF NON-REFERENCED PART BELONGING TO DVD
S143
S145
DISPLAY (SUMMATION OF SIZES OF ALL NON-REFERENCED PARTS) -(SUMMATION OF VOBU SIZES AFTER RE-ENCODING) AS VIRTUAL FREE-AREA
S146
NO
DELETION CONFIRMATION PERFORMED?
YES
S147
REPEAT FOR EACH OF NON-REFERENCED PART BELONGING TO DVD
S149
DELETE FROM VOBU INCLUDING In-POINT OF NON-REFERENCED PART k TO VOBU INCLUDING Out-POINT OF NON-REFERENCED PART k
WRITE BACK NEW VOBU RESULTING FROM RE-ENCODING TO DVD
S150
REPEAT FOR EACH NON-REFERENCED PART BELONGING TO DVD
S148
RETURN

FIG.23

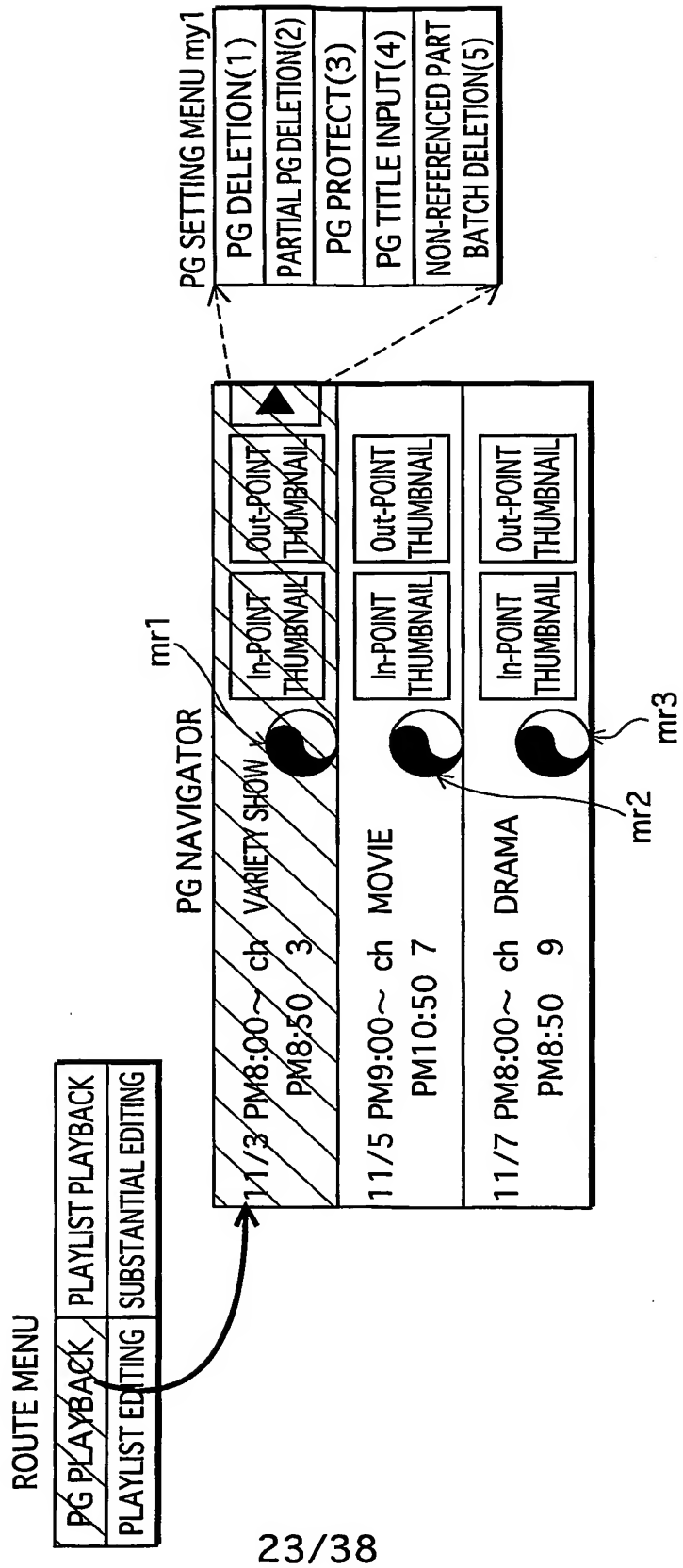

ROUTE MENU
PG PLAYBACK
PLAYLIST PLAYBACK
PLAYLIST EDITING
SUBSTANTIAL EDITING
PG NAVIGATOR
mr1
mr2
mr3
In-POINT THUMBNAIL
Out-POINT THUMBNAIL
11/3 PM8:00~ ch VARIETY SHOW
PM8:50 3
11/5 PM9:00~ ch MOVIE
PM10:50 7
11/7 PM8:00~ ch DRAMA
PM8:50 9
PG SETTING MENU my1
PG DELETION(1)
PARTIAL PG DELETION(2)
PG PROTECT(3)
PG TITLE INPUT(4)
NON-REFERENCED PART BATCH DELETION(5)

FIG.24

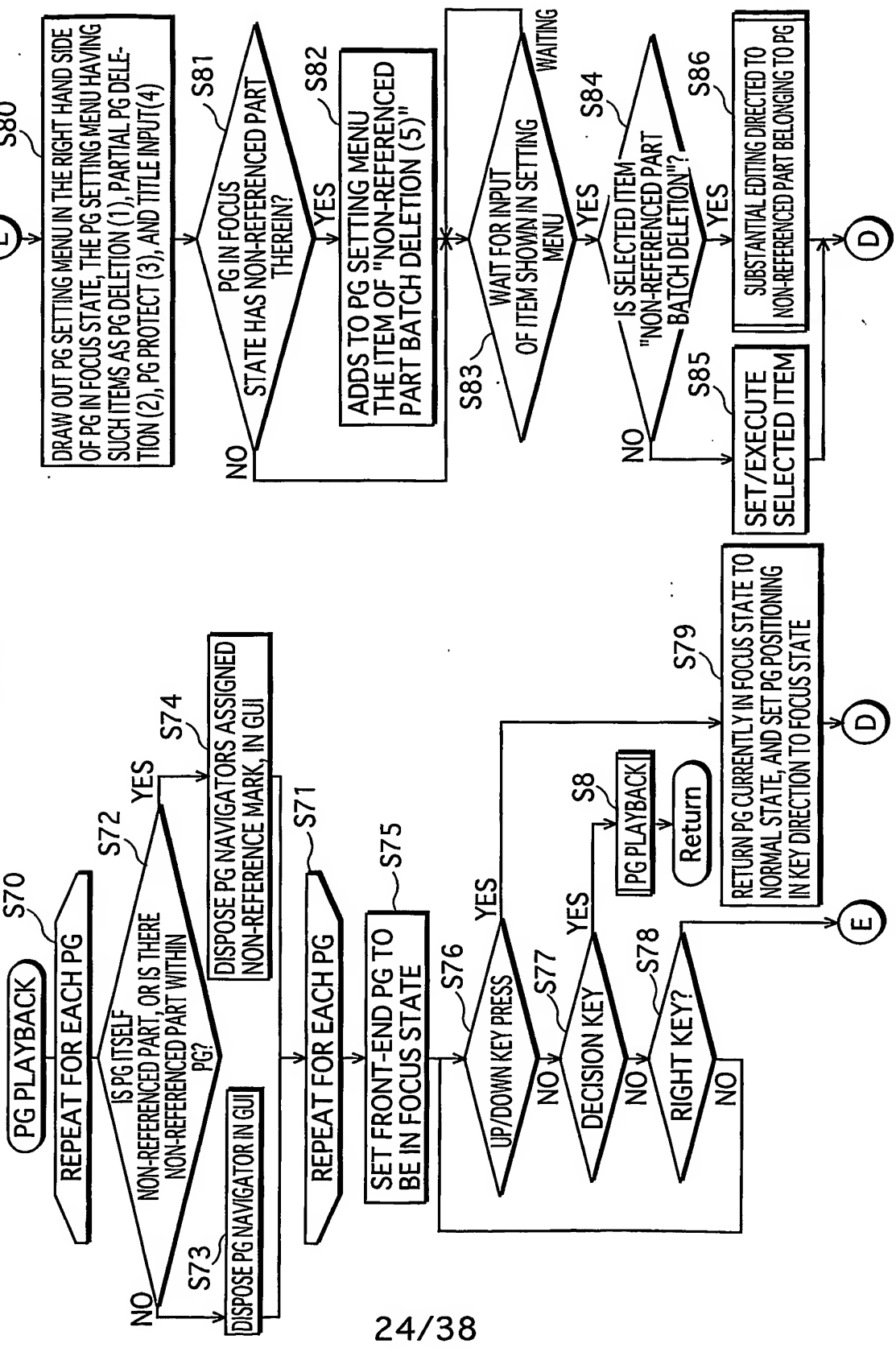

PG PLAYBACK
S70
REPEAT FOR EACH PG
S72
IS PG ITSELF NON-REFERENCED PART, OR IS THERE NON-REFERENCED PART WITHIN PG?
YES
S74
DISPOSE PG NAVIGATORS ASSIGNED NON-REFERENCE MARK, IN GUI
NO
S73
DISPOSE PG NAVIGATOR IN GUI
S71
REPEAT FOR EACH PG
S75
SET FRONT-END PG TO BE IN FOCUS STATE
S76
UP/DOWN KEY PRESS
YES
S77
DECISION KEY
YES
S8
PG PLAYBACK
Return
S78
RIGHT KEY?
NO
S79
RETURN PG CURRENTLY IN FOCUS STATE TO NORMAL STATE, AND SET PG POSITIONING IN KEY DIRECTION TO FOCUS STATE
D
E
E
S80
DRAW OUT PG SETTING MENU IN THE RIGHT HAND SIDE OF PG IN FOCUS STATE, THE PG SETTING MENU HAVING SUCH ITEMS AS PG DELETION (1), PARTIAL PG DELETION (2), PG PROTECT (3), AND TITLE INPUT(4)
S81
PG IN FOCUS STATE HAS NON-REFERENCED PART THEREIN?
YES
S82
ADDS TO PG SETTING MENU THE ITEM OF "NON-REFERENCED PART BATCH DELETION (5)"
NO
S83
WAIT FOR INPUT OF ITEM SHOWN IN SETTING MENU
WAITING
YES
S84
IS SELECTED ITEM "NON-REFERENCED PART BATCH DELETION"?
YES
S86
SUBSTANTIAL EDITING DIRECTED TO NON-REFERENCED PART BELONGING TO PG
D
NO
S85
SET/EXECUTE SELECTED ITEM

FIG.25

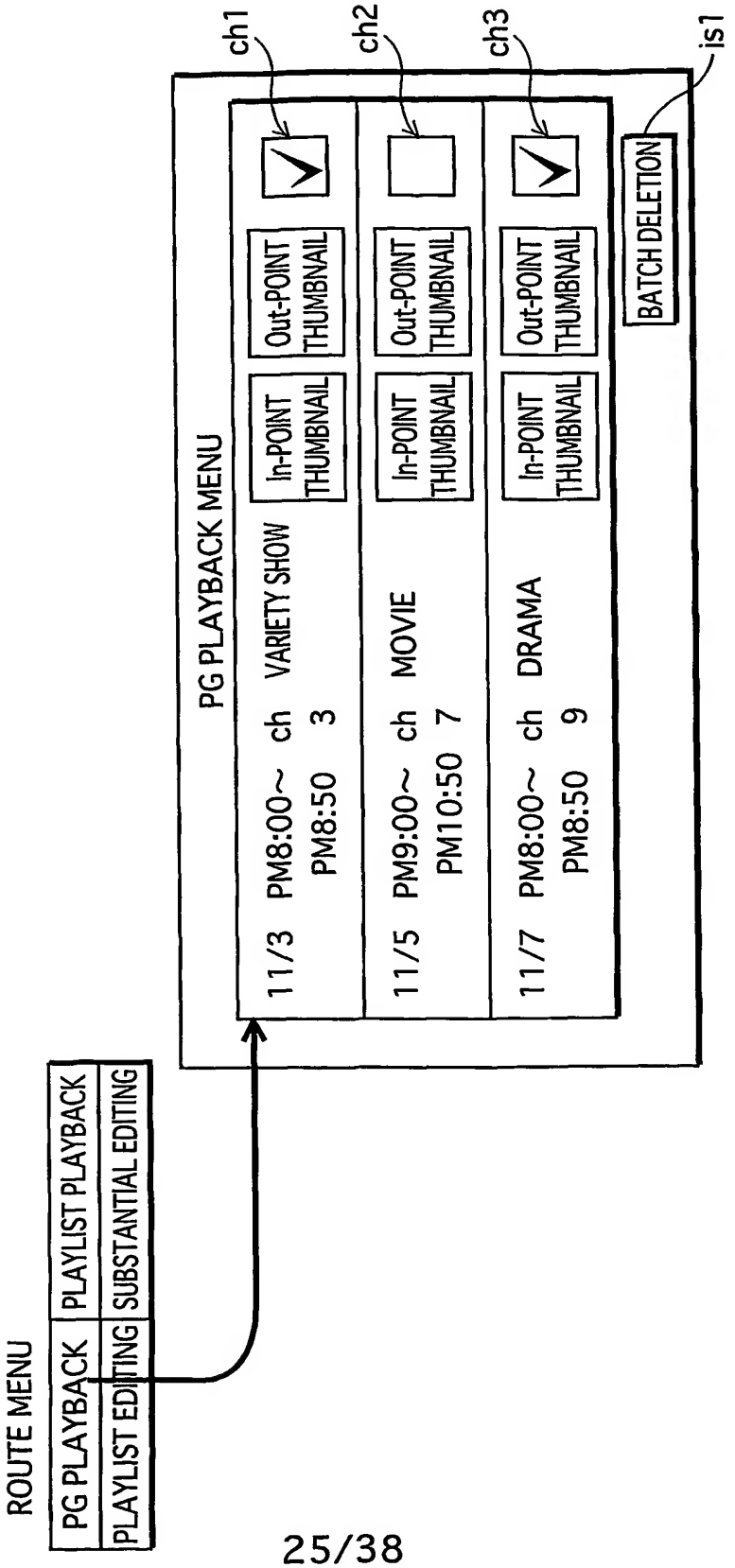

ROUTE MENU
PG PLAYBACK
PLAYLIST EDITING
PLAYLIST PLAYBACK
SUBSTANTIAL EDITING
PG PLAYBACK MENU
ch1
ch2
ch3
is1
11/3 PM8:00~ ch VARIETY SHOW
PM8:50 3
11/5 PM9:00~ ch MOVIE
PM10:50 7
11/7 PM8:00~ ch DRAMA
PM8:50 9
In-POINT THUMBNAIL
Out-POINT THUMBNAIL
BATCH DELETION

FIG.26

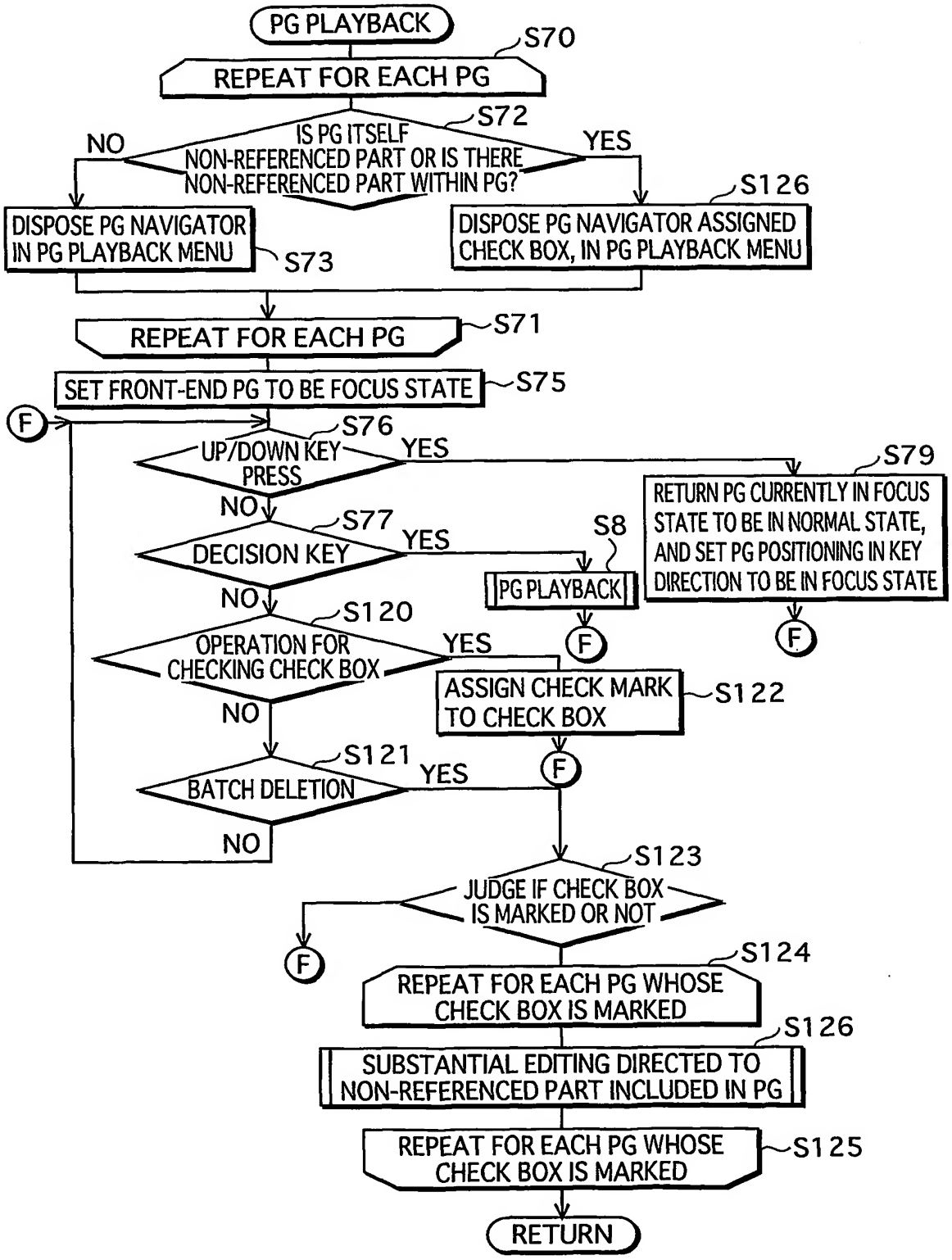

PG PLAYBACK
S70
REPEAT FOR EACH PG
S72
IS PG ITSELF NON-REFERENCED PART OR IS THERE NON-REFERENCED PART WITHIN PG?
NO
YES
DISPOSE PG NAVIGATOR IN PG PLAYBACK MENU
S73
S126
DISPOSE PG NAVIGATOR ASSIGNED CHECK BOX, IN PG PLAYBACK MENU
REPEAT FOR EACH PG
S71
SET FRONT-END PG TO BE FOCUS STATE
S75
F
S76
UP/DOWN KEY PRESS
YES
S79
RETURN PG CURRENTLY IN FOCUS STATE TO BE IN NORMAL STATE, AND SET PG POSITIONING IN KEY DIRECTION TO BE IN FOCUS STATE
NO
S77
DECISION KEY
YES
S8
PG PLAYBACK
NO
S120
OPERATION FOR CHECKING CHECK BOX
YES
ASSIGN CHECK MARK TO CHECK BOX
S122
NO
S121
BATCH DELETION
YES
NO
S123
JUDGE IF CHECK BOX IS MARKED OR NOT
S124
REPEAT FOR EACH PG WHOSE CHECK BOX IS MARKED
S126
SUBSTANTIAL EDITING DIRECTED TO NON-REFERENCED PART INCLUDED IN PG
REPEAT FOR EACH PG WHOSE CHECK BOX IS MARKED
S125
RETURN

FIG.27

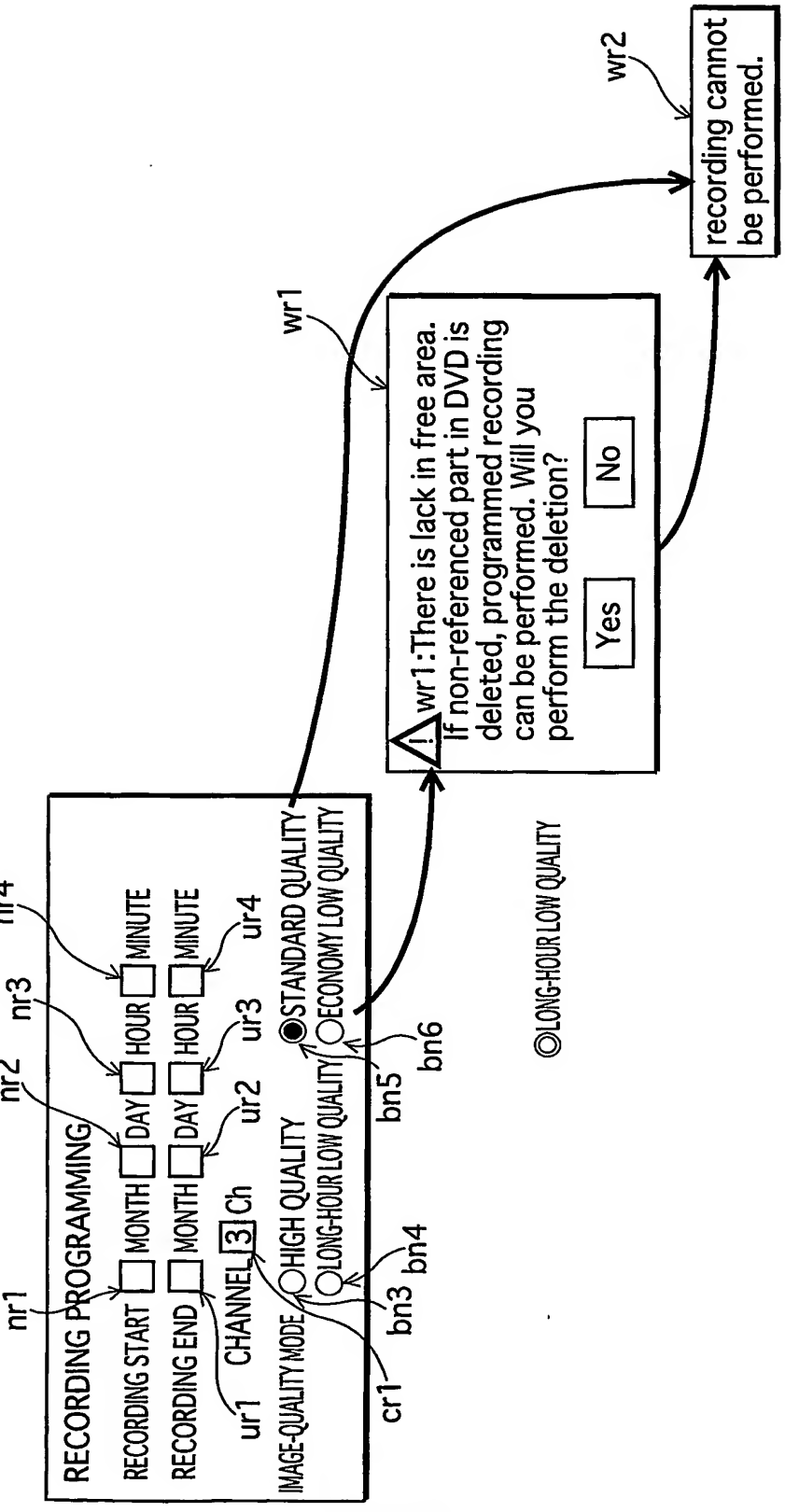
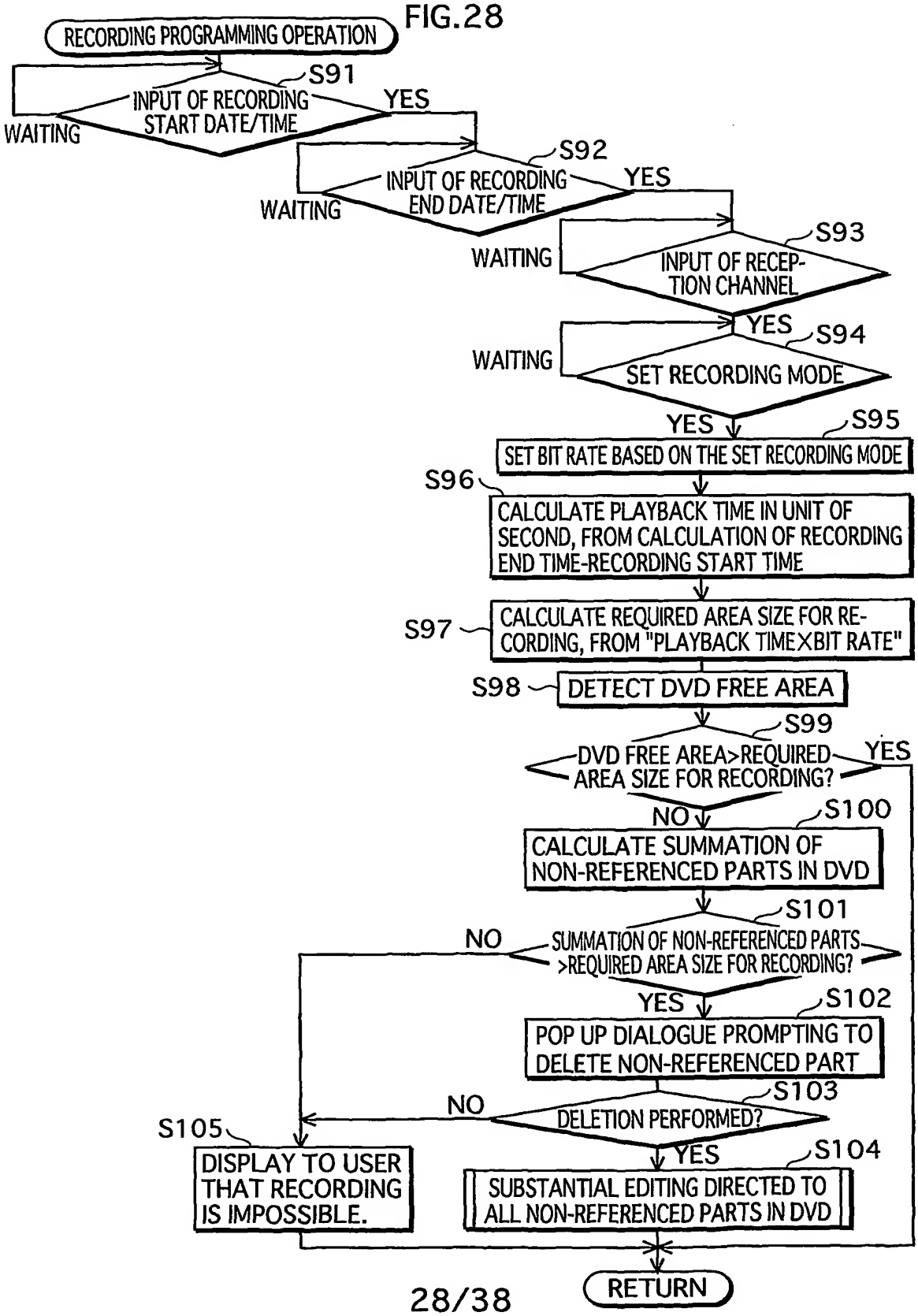

RECORDING PROGRAMMING
RECORDING START
MONTH
DAY
HOUR
MINUTE
RECORDING END
MONTH
DAY
HOUR
MINUTE
CHANNEL 3 Ch
IMAGE-QUALITY MODE
HIGH QUALITY
LONG-HOUR LOW QUALITY
STANDARD QUALITY
ECONOMY LOW QUALITY
nr1
nr2
nr3
nr4
ur1
ur2
ur3
ur4
cr1
bn3
bn4
bn5
bn6
wr1
wr1:There is lack in free area. If non-referenced part in DVD is deleted, programmed recording can be performed. Will you perform the deletion?
Yes
No
wr2
recording cannot be performed.
◎LONG-HOUR LOW QUALITY

FIG.28


RECORDING PROGRAMMING OPERATION
S91
INPUT OF RECORDING START DATE/TIME
YES
WAITING
S92
INPUT OF RECORDING END DATE/TIME
YES
WAITING
S93
INPUT OF RECEPTION CHANNEL
YES
WAITING
S94
SET RECORDING MODE
YES
S95
SET BIT RATE BASED ON THE SET RECORDING MODE
S96
CALCULATE PLAYBACK TIME IN UNIT OF SECOND, FROM CALCULATION OF RECORDING END TIME-RECORDING START TIME
S97
CALCULATE REQUIRED AREA SIZE FOR RECORDING, FROM "PLAYBACK TIME×BIT RATE"
S98
DETECT DVD FREE AREA
S99
DVD FREE AREA>REQUIRED AREA SIZE FOR RECORDING?
YES
NO
S100
CALCULATE SUMMATION OF NON-REFERENCED PARTS IN DVD
S101
SUMMATION OF NON-REFERENCED PARTS >REQUIRED AREA SIZE FOR RECORDING?
NO
YES
S102
POP UP DIALOGUE PROMPTING TO DELETE NON-REFERENCED PART
S103
DELETION PERFORMED?
NO
YES
S104
SUBSTANTIAL EDITING DIRECTED TO ALL NON-REFERENCED PARTS IN DVD
S105
DISPLAY TO USER THAT RECORDING IS IMPOSSIBLE.
RETURN

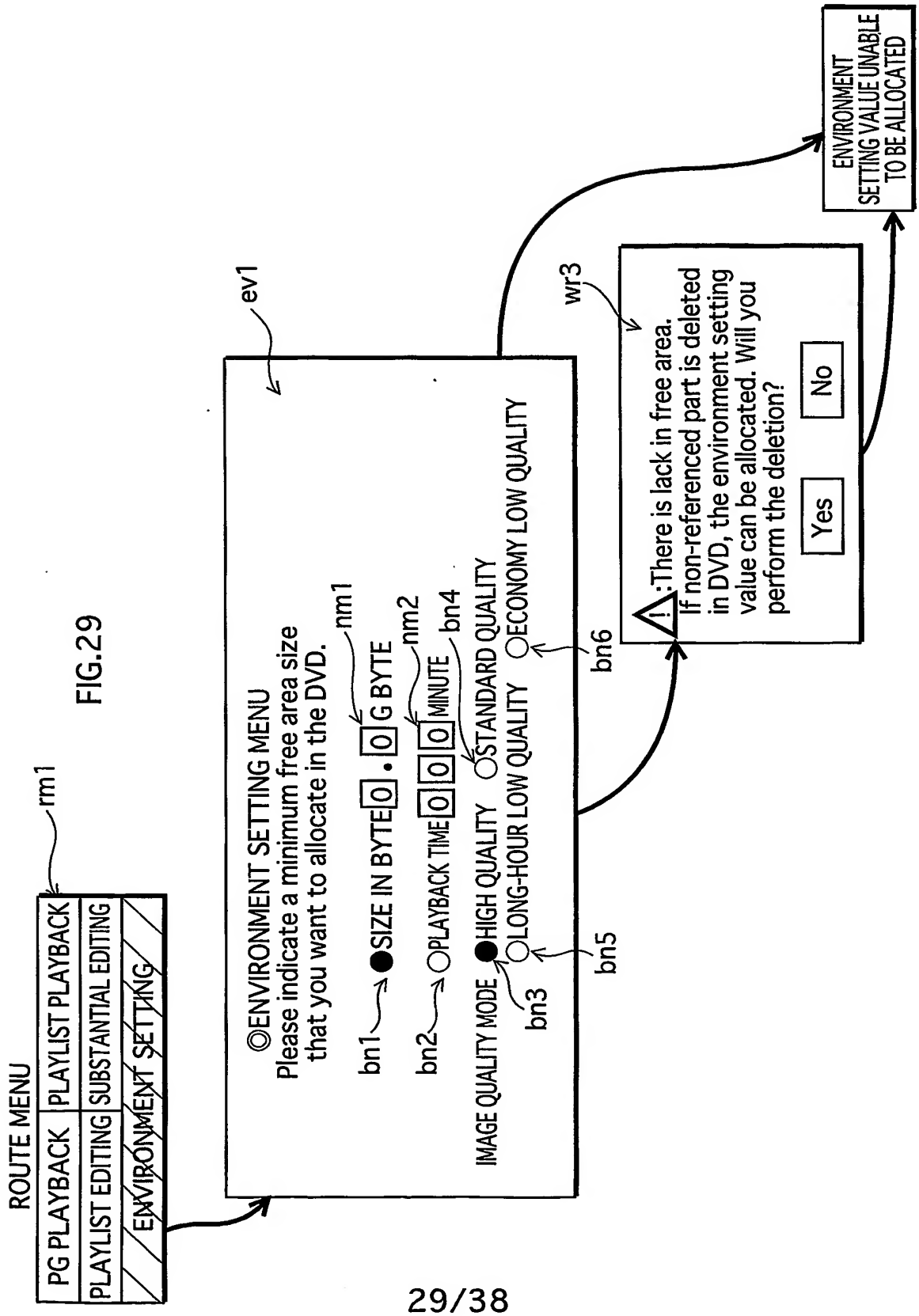

ROUTE MENU
PG PLAYBACK
PLAYLIST PLAYBACK
PLAYLIST EDITING
SUBSTANTIAL EDITING
ENVIRONMENT SETTING
rm1
ev1
◎ENVIRONMENT SETTING MENU
Please indicate a minimum free area size that you want to allocate in the DVD.
nm1
bn1
●SIZE IN BYTE 0 . 0 G BYTE
nm2
bn2
○PLAYBACK TIME 0 0 MINUTE
bn4
IMAGE QUALITY MODE ●HIGH QUALITY ○STANDARD QUALITY
○LONG-HOUR LOW QUALITY ○ECONOMY LOW QUALITY
bn3
bn5
bn6
wr3
:There is lack in free area.
If non-referenced part is deleted in DVD, the environment setting value can be allocated. Will you perform the deletion?
Yes
No
ENVIRONMENT SETTING VALUE UNABLE TO BE ALLOCATED

FIG.29

FIG.30

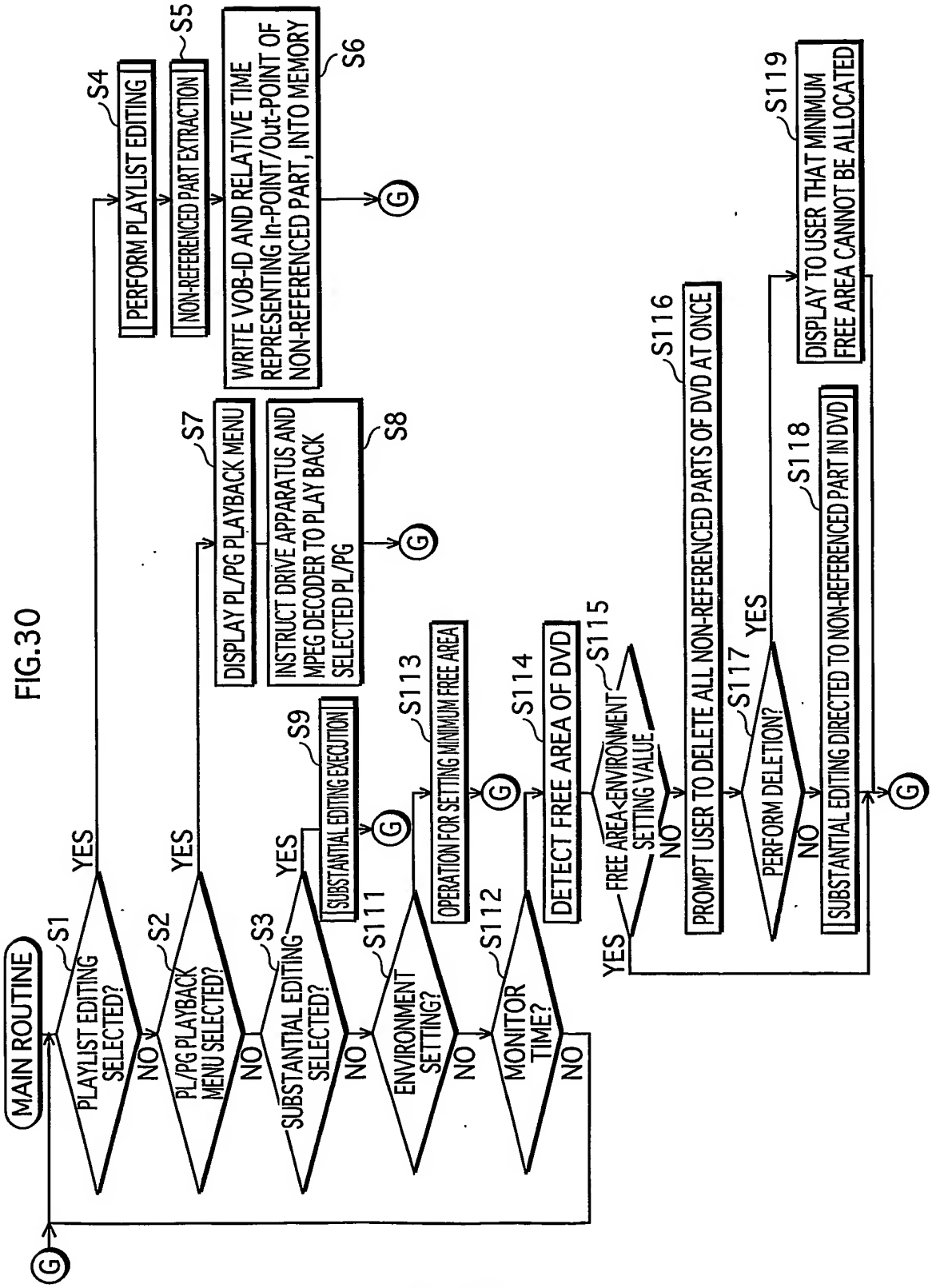

MAIN ROUTINE
S1
PLAYLIST EDITING SELECTED?
YES
S4
PERFORM PLAYLIST EDITING
NO
S2
PL/PG PLAYBACK MENU SELECTED?
YES
S5
NON-REFERENCED PART EXTRACTION
S6
WRITE VOB-ID AND RELATIVE TIME REPRESENTING In-POINT/Out-POINT OF NON-REFERENCED PART, INTO MEMORY
NO
S3
SUBSTANTIAL EDITING SELECTED?
YES
S7
DISPLAY PL/PG PLAYBACK MENU
S8
INSTRUCT DRIVE APPARATUS AND MPEG DECODER TO PLAY BACK SELECTED PL/PG
NO
S111
ENVIRONMENT SETTING?
YES
S9
SUBSTANTIAL EDITING EXECUTION
S113
OPERATION FOR SETTING MINIMUM FREE AREA
NO
S112
MONITOR TIME?
YES
S114
DETECT FREE AREA OF DVD
S115
FREE AREA<ENVIRONMENT SETTING VALUE
NO
S116
PROMPT USER TO DELETE ALL NON-REFERENCED PARTS OF DVD AT ONCE
S117
PERFORM DELETION?
YES
S118
SUBSTANTIAL EDITING DIRECTED TO NON-REFERENCED PART IN DVD
NO
S119
DISPLAY TO USER THAT MINIMUM FREE AREA CANNOT BE ALLOCATED
G

FIG.31

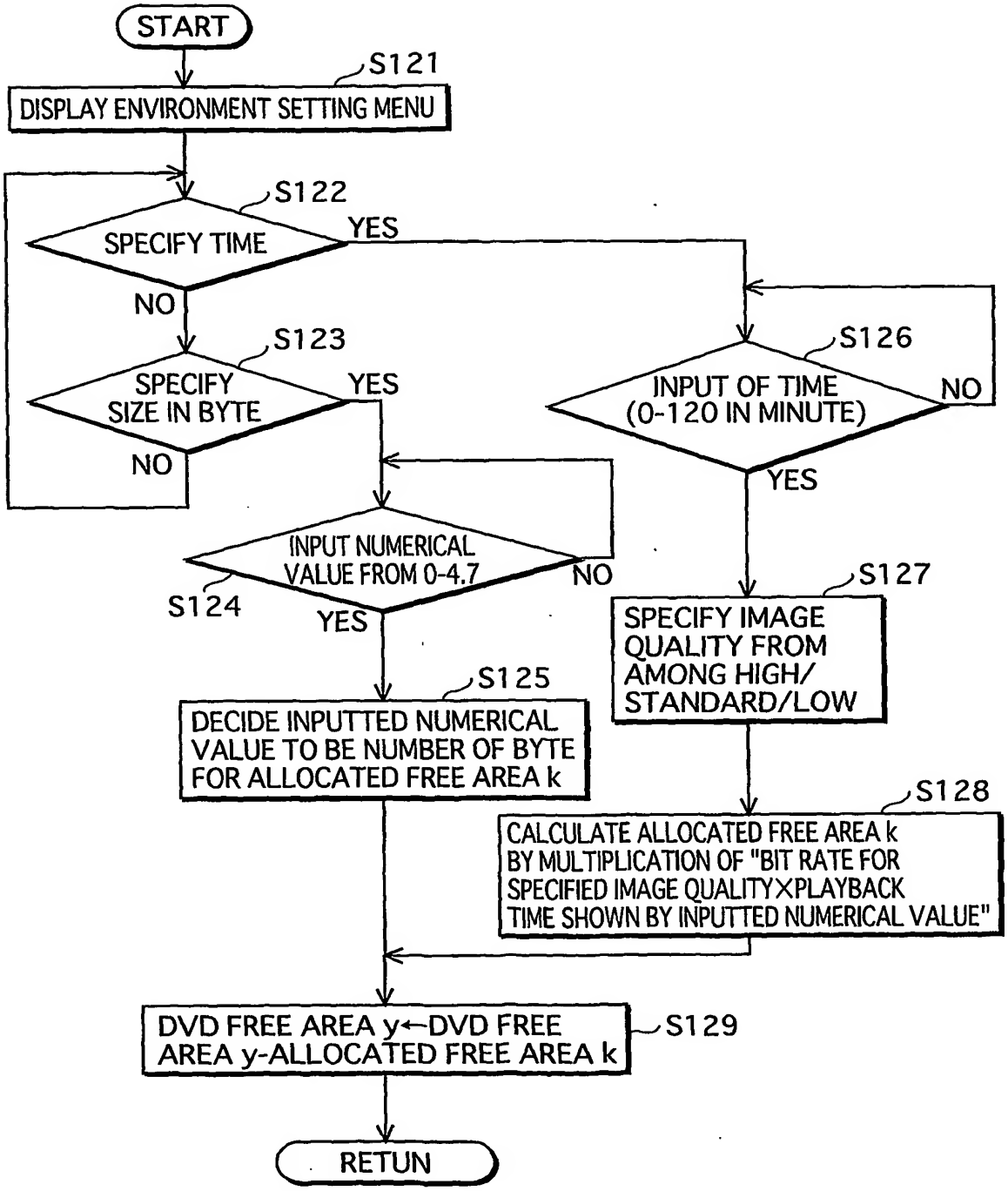

START
S121
DISPLAY ENVIRONMENT SETTING MENU
S122
SPECIFY TIME
YES
NO
S123
SPECIFY SIZE IN BYTE
YES
NO
S126
INPUT OF TIME (0-120 IN MINUTE)
NO
YES
INPUT NUMERICAL VALUE FROM 0-4.7
NO
S124
YES
S127
SPECIFY IMAGE QUALITY FROM AMONG HIGH/ STANDARD/LOW
S125
DECIDE INPUTTED NUMERICAL VALUE TO BE NUMBER OF BYTE FOR ALLOCATED FREE AREA k
S128
CALCULATE ALLOCATED FREE AREA k BY MULTIPLICATION OF "BIT RATE FOR SPECIFIED IMAGE QUALITY×PLAYBACK TIME SHOWN BY INPUTTED NUMERICAL VALUE"
DVD FREE AREA y←DVD FREE AREA y-ALLOCATED FREE AREA k
S129
RETUN

FIG.32

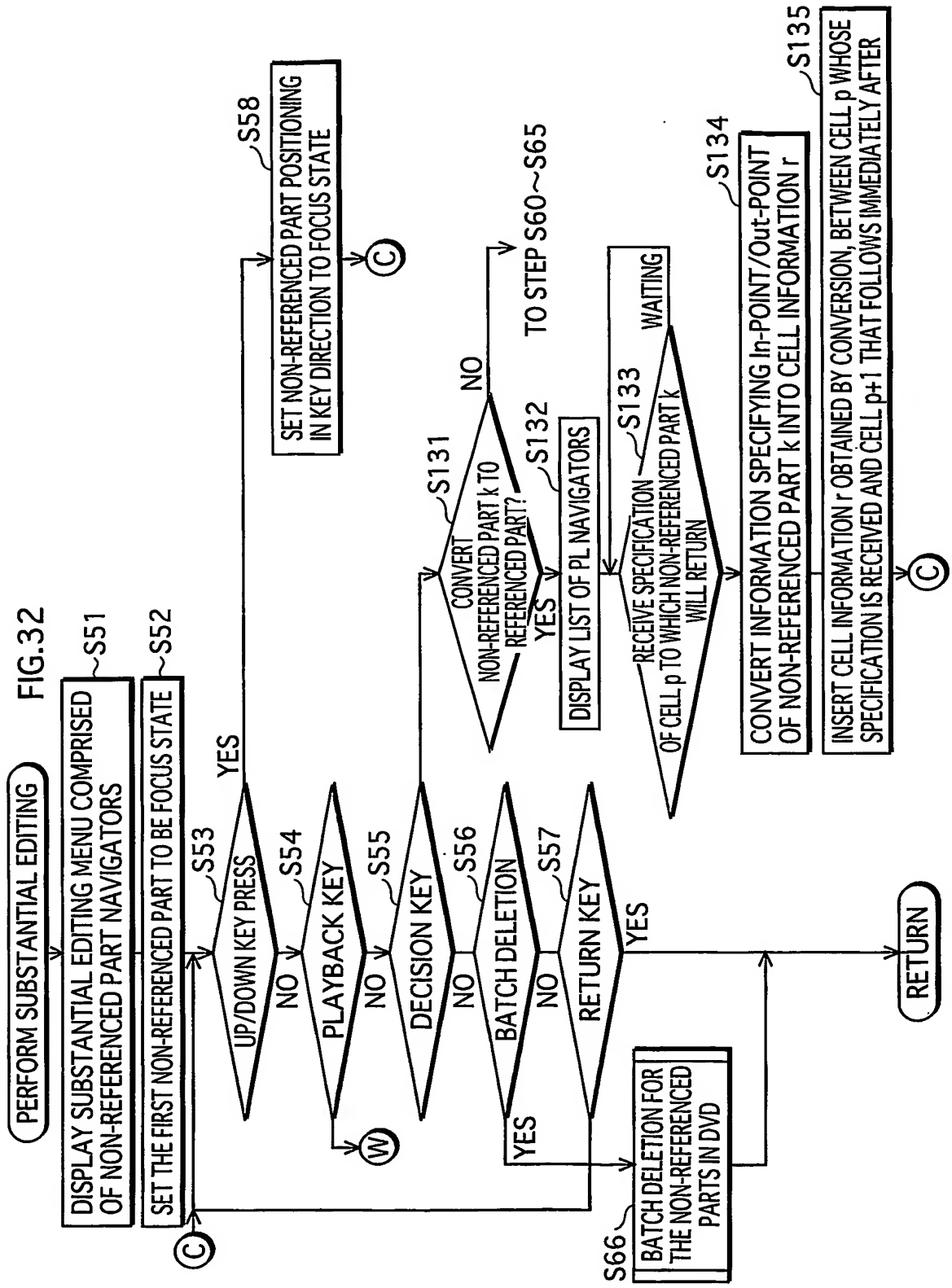

PERFORM SUBSTANTIAL EDITING
DISPLAY SUBSTANTIAL EDITING MENU COMPRISED OF NON-REFERENCED PART NAVIGATORS
S51
SET THE FIRST NON-REFERENCED PART TO BE FOCUS STATE
S52
S53
UP/DOWN KEY PRESS
YES
S58
SET NON-REFERENCED PART POSITIONING IN KEY DIRECTION TO FOCUS STATE
C
NO
S54
PLAYBACK KEY
NO
S55
DECISION KEY
NO
S56
BATCH DELETION
YES
S57
RETURN KEY
YES
S131
CONVERT NON-REFERENCED PART k TO REFERENCED PART?
NO
TO STEP S60~S65
YES
S132
DISPLAY LIST OF PL NAVIGATORS
S133
RECEIVE SPECIFICATION OF CELL p TO WHICH NON-REFERENCED PART k WILL RETURN
WAITING
S134
CONVERT INFORMATION SPECIFYING In-POINT/Out-POINT OF NON-REFERENCED PART k INTO CELL INFORMATION r
S135
INSERT CELL INFORMATION r OBTAINED BY CONVERSION, BETWEEN CELL p WHOSE SPECIFICATION IS RECEIVED AND CELL p+1 THAT FOLLOWS IMMEDIATELY AFTER
C
W
S66
BATCH DELETION FOR THE NON-REFERENCED PARTS IN DVD
RETURN

FIG.33

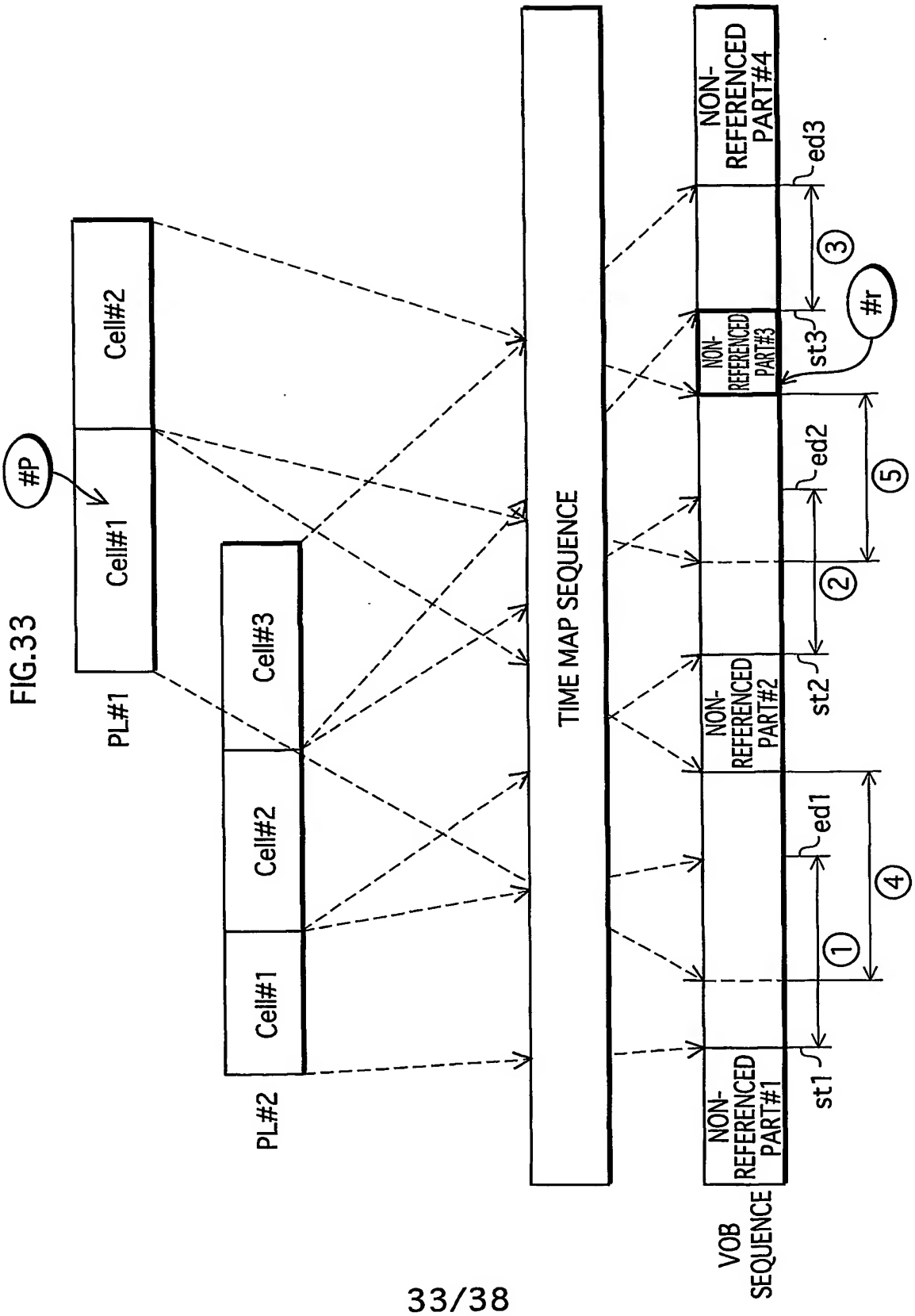

#P
Cell#1
Cell#2
PL#1
Cell#1
Cell#2
Cell#3
PL#2
TIME MAP SEQUENCE
NON-REFERENCED PART#1
NON-REFERENCED PART#2
NON-REFERENCED PART#3
NON-REFERENCED PART#4
VOB SEQUENCE
st1
st2
st3
#r
ed1
ed2
ed3
①
②
③
④
⑤

FIG.34

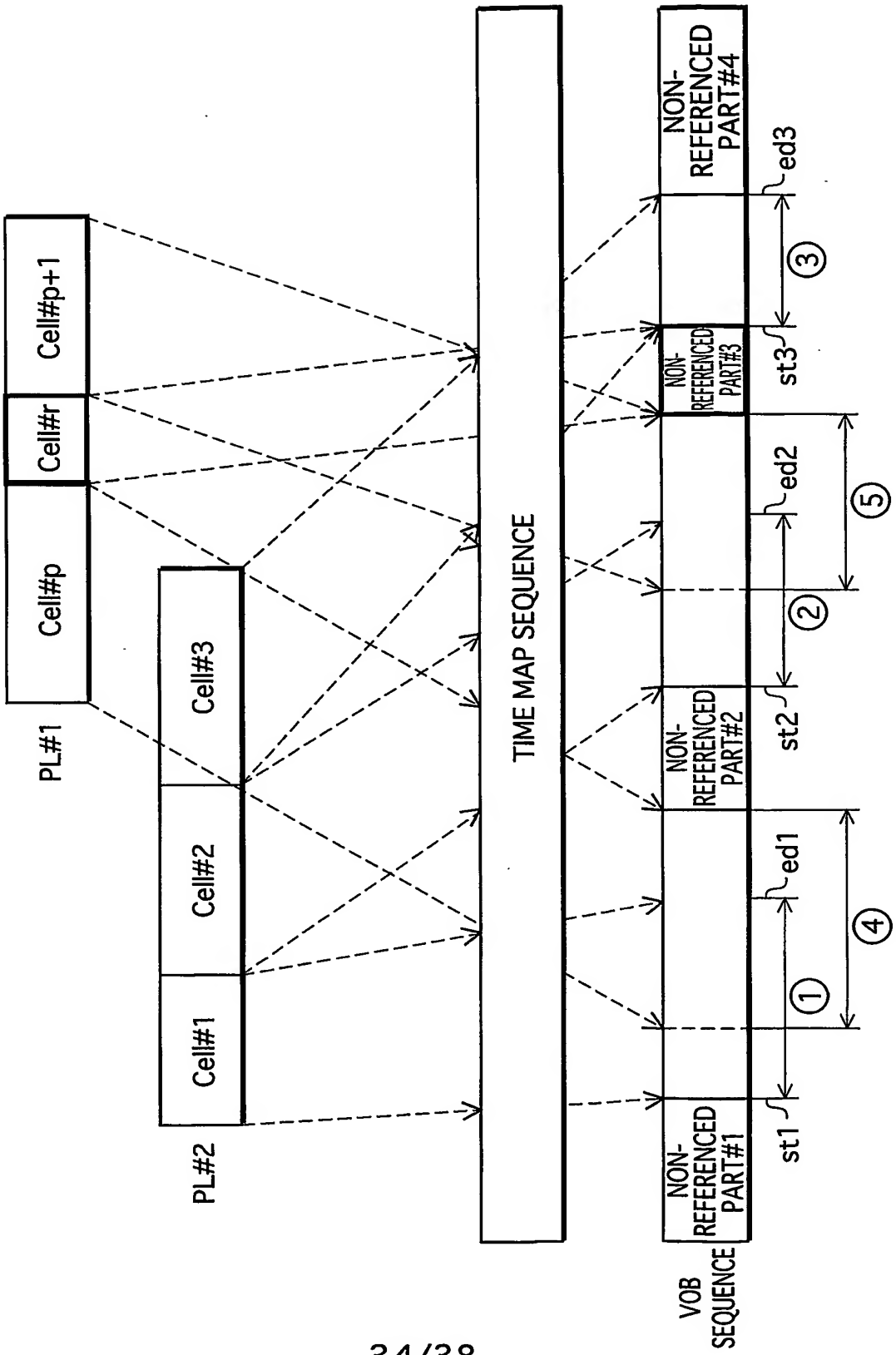

PL#1
Cell#p
Cell#r
Cell#p+1
PL#2
Cell#1
Cell#2
Cell#3
TIME MAP SEQUENCE
VOB SEQUENCE
NON-REFERENCED PART#1
NON-REFERENCED PART#2
NON-REFERENCED PART#3
NON-REFERENCED PART#4
st1
st2
st3
ed1
ed2
ed3
①
②
③
④
⑤

FIG.35

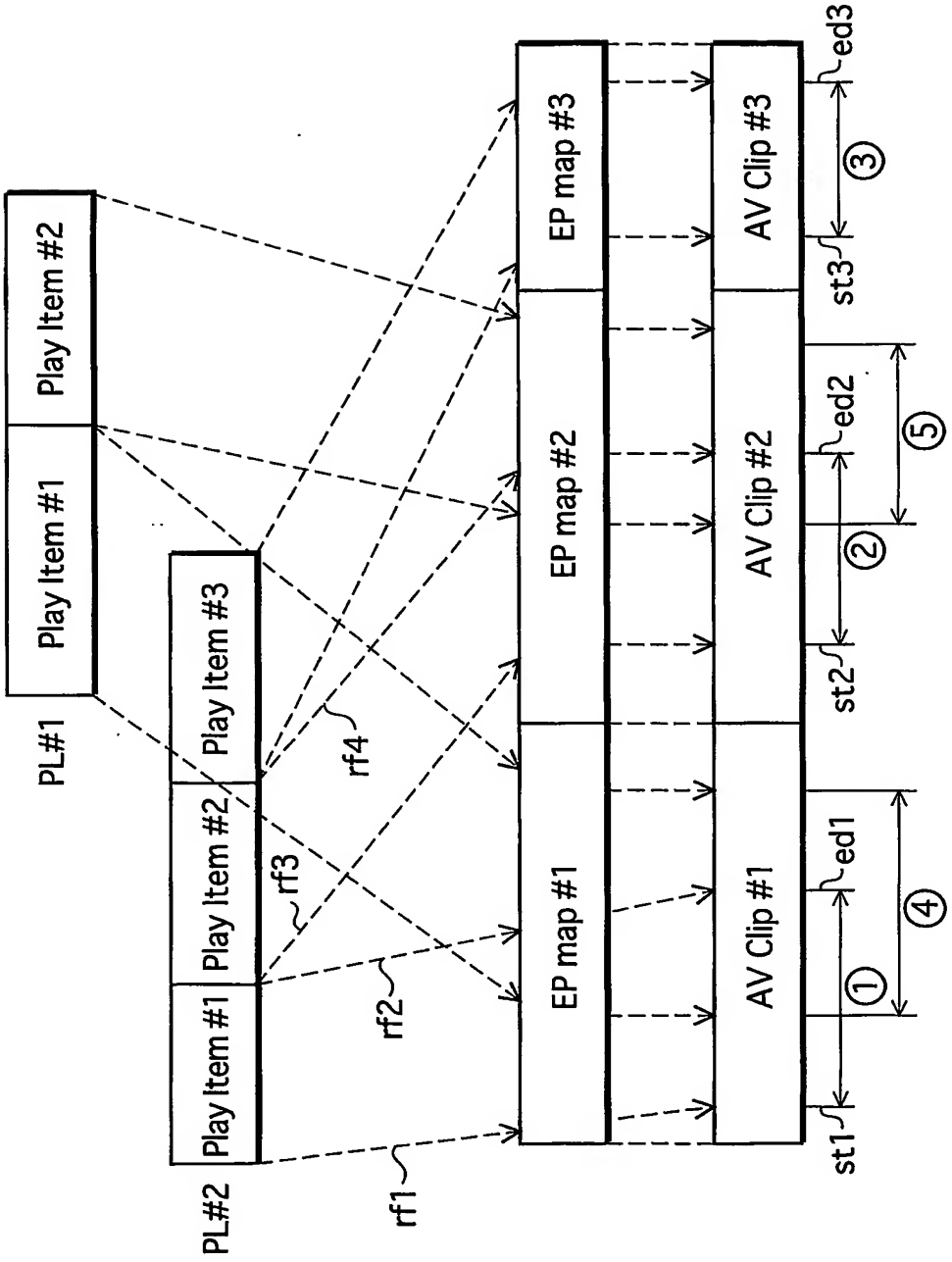

PL#1
Play Item #1
Play Item #2
PL#2
Play Item #1
Play Item #2
Play Item #3
rf1
rf2
rf3
rf4
EP map #1
EP map #2
EP map #3
AV Clip #1
AV Clip #2
AV Clip #3
st1
st2
st3
ed1
ed2
ed3
①
②
③
④
⑤

FIG.36

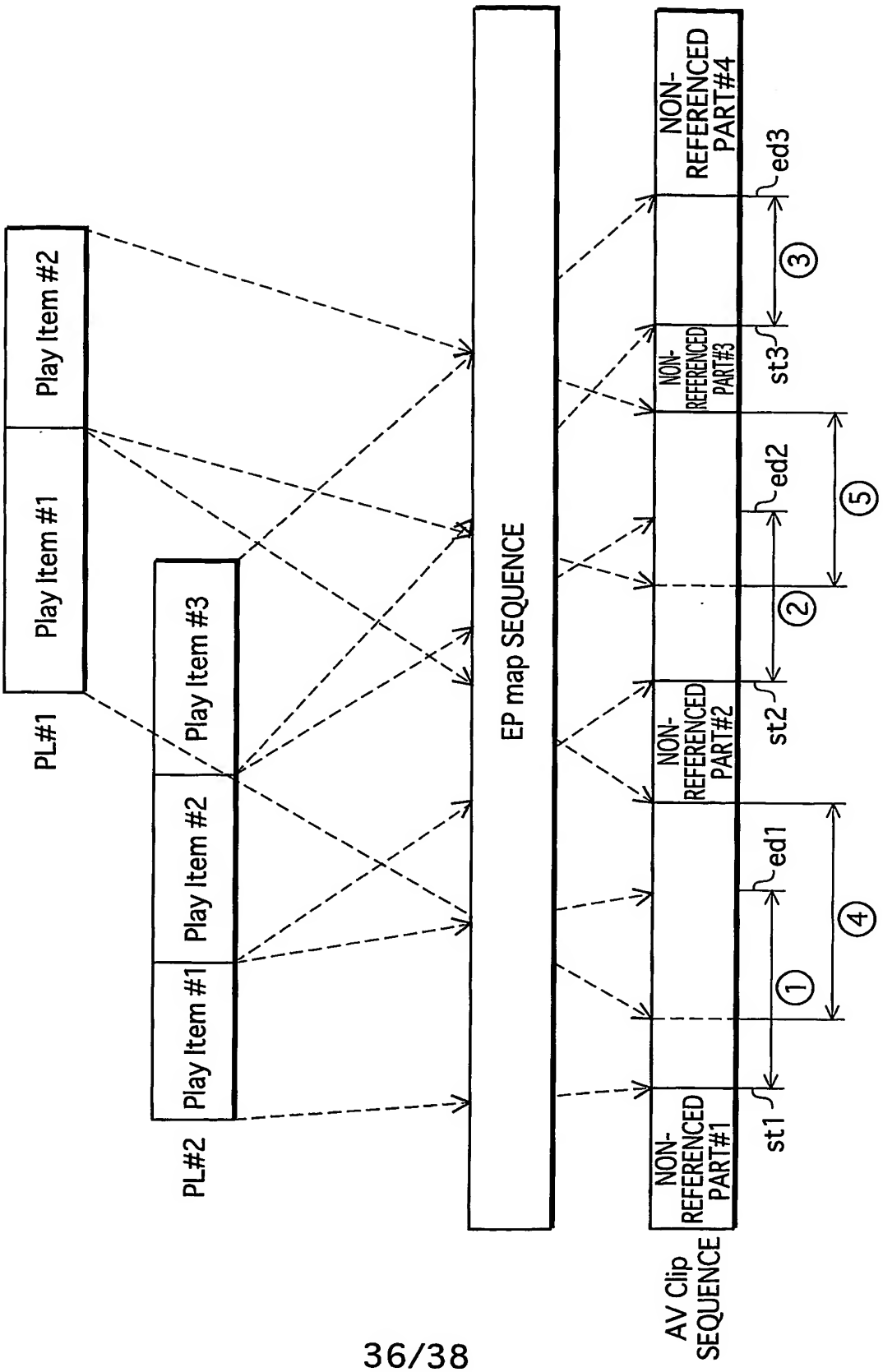

PL#1
Play Item #1
Play Item #2
PL#2
Play Item #1
Play Item #2
Play Item #3
EP map SEQUENCE
AV Clip SEQUENCE
NON-REFERENCED PART#1
NON-REFERENCED PART#2
NON-REFERENCED PART#3
NON-REFERENCED PART#4
st1
st2
st3
ed1
ed2
ed3
①
②
③
④
⑤

FIG.37

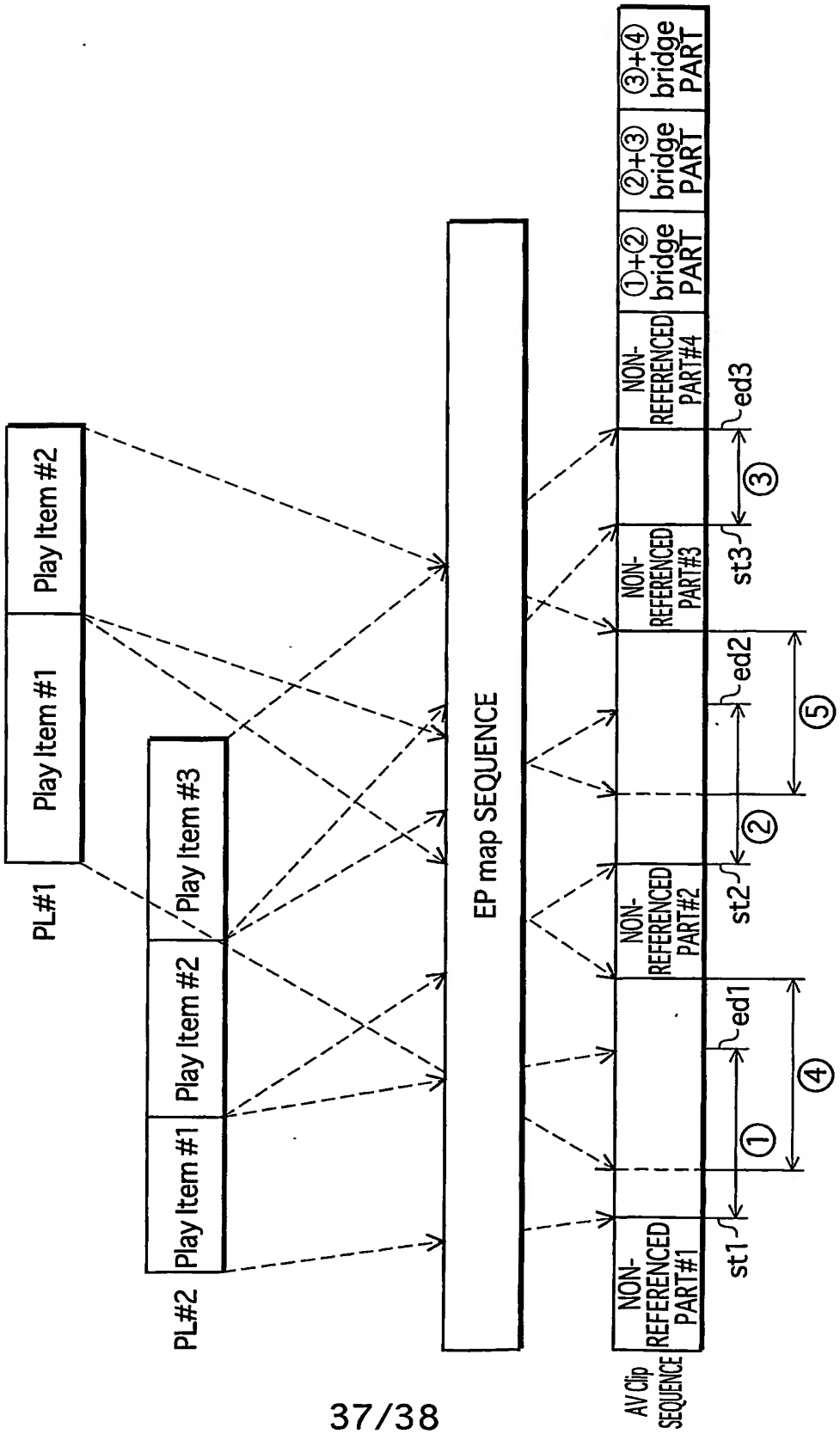
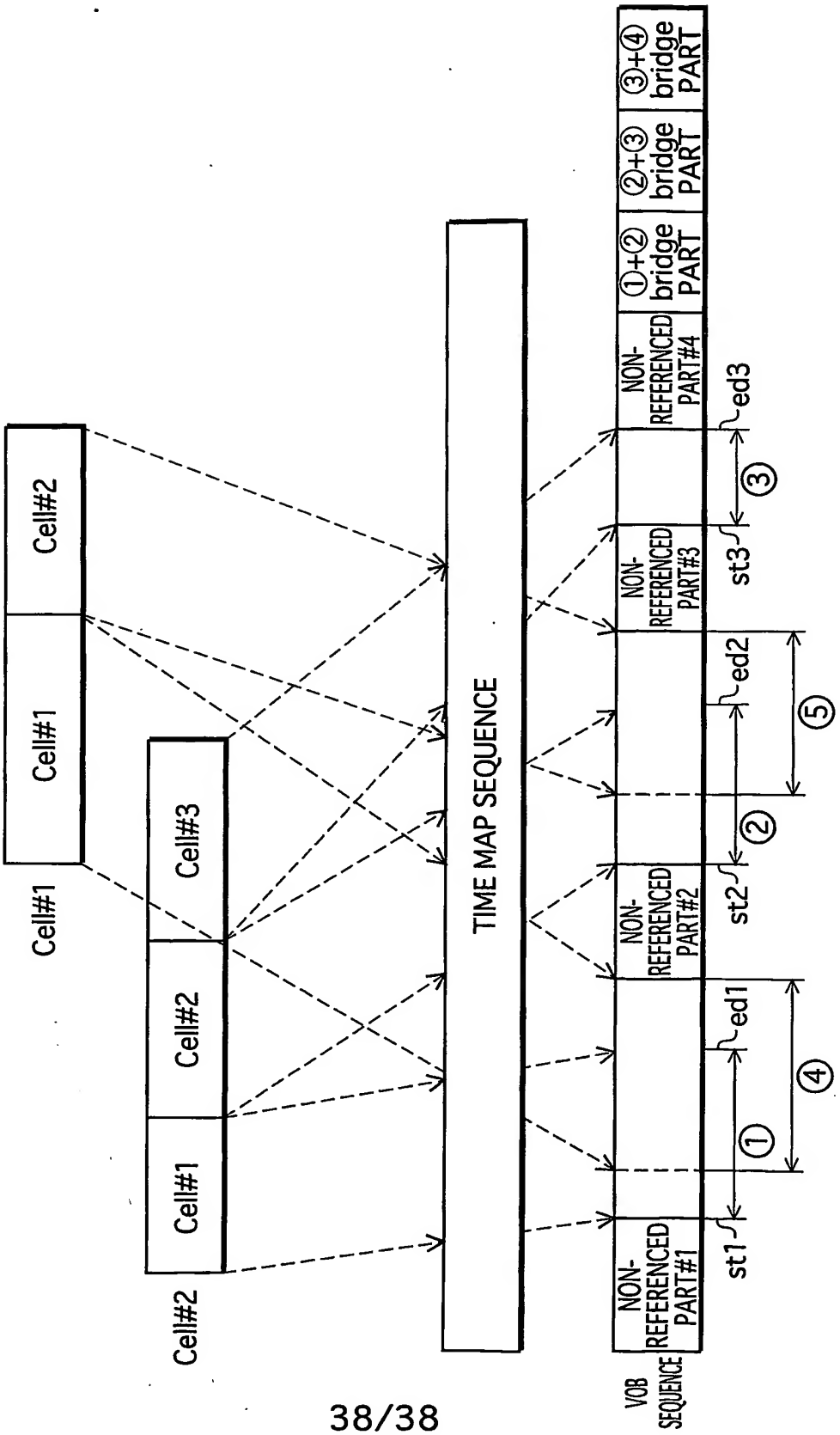

PL#1
Play Item #1
Play Item #2
PL#2
Play Item #1
Play Item #2
Play Item #3
EP map SEQUENCE
AV Clip SEQUENCE
NON-REFERENCED PART#1
NON-REFERENCED PART#2
NON-REFERENCED PART#3
NON-REFERENCED PART#4
①+② bridge PART
②+③ bridge PART
③+④ bridge PART
st1
st2
st3
ed1
ed2
ed3
①
②
③
④
⑤

FIG.38


Cell#1
Cell#2
Cell#1
Cell#2
Cell#3
Cell#1
Cell#2
TIME MAP SEQUENCE
NON-REFERENCED PART#1
NON-REFERENCED PART#2
NON-REFERENCED PART#3
NON-REFERENCED PART#4
①+② bridge PART
②+③ bridge PART
③+④ bridge PART
VOB SEQUENCE
st1
st2
st3
ed1
ed2
ed3
①
②
③
④
⑤